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Municipal Solid Waste Management in Texas

Strategic Plan

Waste Planning & Assessment Division

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

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Strategic Plan

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Prepared by
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Foreword

This strategic plan is provided to the people of Texas to help in their understanding of current conditions concerning the management of municipal solid waste in Texas.

This plan updates the goals, objectives, and recommendations in the *Municipal Solid Waste Plan for Texas*, published by the Texas Natural Resource Conservation Commission (TNRCC) in January 1995. A separate *Status Report* is also being prepared as a companion to this plan. Together, these documents will make up the required biennial update of the comprehensive state municipal solid waste management strategic plan.

Questions concerning this plan, as well as concerning information about the management of solid waste in the state, may be directed to the Waste Planning and Assessment Division of the TNRCC at (512) 239-6809.

To obtain additional copies of this plan, contact the TNRCC's Publications Section at (512) 239-0028.

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Chapter 1:
Purpose

Purpose and Role of the Plan

The *Texas Solid Waste Disposal Act* (TSWDA) directs the Texas Natural Resource Conservation Commission (TNRCC) to prepare a Comprehensive Municipal Solid Waste Management Strategic Plan for Texas (§§361.020 and 361.0201, Texas Health and Safety Code). The TSWDA further directs the TNRCC to update the plan every two years.

In fulfillment of the statutory planning requirements, the TNRCC published the *Municipal Solid Waste Plan for Texas* in January 1995. The 1995 plan outlined the existing and expected future municipal solid waste (MSW) management needs of Texas. That plan also included goals, objectives, and recommendations to help guide the state's MSW management activities.

In a departure from the previous planning format, the TNRCC will publish the required update information in two separate documents: this strategic plan, and a status report containing data and information concerning the status of MSW management activities in the state.

The guidance and information presented herein will assist state and local leaders, and the general public, to better understand the issues and problems associated with the management of MSW in Texas. *The recommendations provided are not intended as regulatory requirements.*

Hierarchy of Municipal Solid Waste Management Methods

The management of MSW in Texas is guided by the *Hierarchy of Municipal Solid Waste Management Methods* established by the legislature in the TSWDA.

Public Policy Concerning Municipal Solid Waste and Sludge
Section 361.022, Texas Health and Safety Code

To protect the public health and environment, it is the state's goal, through source reduction, to eliminate the generation of municipal solid waste and municipal sludge to the maximum extent that is technologically and economically feasible. Therefore, it is the state's public policy that, in generating, treating, storing, and disposing of municipal solid waste or municipal sludge, the methods listed below are preferred to the extent economically and technologically feasible and considering the appropriateness of the method to the type of solid waste material or sludge generated, treated, disposed of, or stored.

For municipal solid waste, not including sludge, the following methods are preferred, in the order listed:

- Source reduction and waste minimization
- Reuse or recycling of waste
- Treatment to destroy or reprocess waste to recover energy or other beneficial resources if the treatment does not threaten public health, safety, or the environment
- Land disposal

For municipal sludge, the following methods are preferred, in the order listed:

- Source reduction and minimization of sludge production and concentrations of heavy metals and other toxic substances in sludge
- Treatment of sludge to reduce pathogens and recover energy, produce beneficial by-products, or reduce the quantity of sludge
- Marketing and distribution of sludge and sludge products if the marketing and distribution do not threaten public health, safety, or the environment
- Applying sludge to land for beneficial use
- Landfilling

Planning Process

The planning process consisted of first soliciting input on issues from staff within the TNRCC and from other entities, notably the state's 24 councils of governments (COGs) and the TNRCC's Municipal Solid Waste Management and Resource Recovery Advisory Council (MSW Advisory Council). The TNRCC staff then researched the selected issues and developed initial proposals for addressing those issues.

Next, the draft proposals were reviewed internally and, based on that internal review, a revised draft document was prepared and released for external review and comment. Copies of the draft plan were provided to interested groups and entities, including the COGs, the MSW Advisory Council, the TNRCC's Waste Reduction Advisory Committee, and various other state and local entities and organizations.

Notice of the availability of the draft plan was published in the *Texas Register,* and a public review and comment period was opened to receive input from the general public. Four public hearings were also conducted across the state.

Comments received on the draft plan were compiled and reviewed by the TNRCC staff and commissioners and a final plan was prepared. The plan was then adopted by the commissioners on January 17, 1997.

Chapter 2:
Summary and Action Plan

Summary

The issues facing state and local leaders concerning the management of MSW are varied and complex. It would not be possible, nor desired, for this plan to outline all of the solid waste management problems facing the state and attempt to dictate solutions for solving those problems. Rather, the intent of this plan is to identify major areas of statewide concern and to outline possible steps and suggestions for how those concerns may be dealt with. The topic areas discussed* are:

1. Implementing solid waste management plans
2. Landfill issues and assuring disposal capacity
3. Source reduction and recycling
4. Assuring local collection of municipal solid waste
5. Dealing with nuisance dumping and illegal disposal
6. Dealing with liquid wastes
7. Dealing with closed and abandoned MSW landfills
8. Dealing with household hazardous wastes
9. Municipal solid waste management along the border

Goals, objectives, and initiatives are presented for each of these main topic areas in Chapter 3. Additionally, further background discussion and analysis of the issues under these topics, as a basis for the initiatives, are provided in Chapter 4. While the information provided is not a complete analysis of all of the issues and problems, it is hoped that the discussion will provide the reader with a general understanding of the reasons behind the goals and initiatives.

It is important to note that a potential topic concerning ongoing funding for state MSW programs is not discussed in this plan, although the discussion under Topic 7 includes several recommendations pertaining to funding for programs dealing with closed landfills. State MSW programs are funded from a fee on the disposal of MSW. In accordance with House Bill (H.B.) 3072 enacted in 1995, half of those funds go to pay for the TNRCC's MSW operations and activities and half are distributed to the state's 24 planning regions for supporting regional programs and local projects consistent with the regional solid waste management plans prepared by the COGs. The House Joint Interim Committee on TNRCC Funding met during 1996 to review the mechanisms for funding the agency. The findings of that committee may include consideration of funding for MSW programs, in conjunction with the other funding mechanisms. Consequently, this plan does not attempt to duplicate those discussions and analyses.

Action Plan

* The order of the various topics does not reflect the priority that may be given to the recommendations under each topic.

Implementation of this plan will take place through several mechanisms. First, the TNRCC will refer to the plan when evaluating matters dealing with municipal solid waste and any proposals requiring legislative action will be communicated to the legislature. Second, the TNRCC will work with the COGs and local governments to ensure that the statewide goals and objectives are reflected in regional and local planning efforts overseen by the TNRCC. Finally, the priorities established in this plan will be used as the basis for determining the funding priorities for the next biennial solid waste grant program.

Priorities for TNRCC Action

The discussion of the topic areas presented in the next chapter includes a variety of initiatives for action by the TNRCC. While the TNRCC considers all of these initiatives as important, there are several priority areas that will receive particular attention by the agency:

- ***Waste reduction goals.*** The TNRCC will continue efforts to achieve the state goal of reducing the amount of solid waste disposed of in the state. Market development efforts will need to continue. Also, the TNRCC will look at ways to increase the accuracy of information received concerning the levels of waste disposal and recycling taking place in the state.
- ***Affordable MSW management capacity.*** The availability of adequate and affordable facilities and services for managing the state's municipal solid wastes will continue to be an important concern of the TNRCC. In particular, the state's liquid waste management needs will be further evaluated.
- ***Illegal disposal.*** Illegal disposal continues to be a concern of both state and local governments, and the TNRCC will work with local entities to better assess their illegal disposal problems and to identify long-term solutions to those problems.
- ***Closed and abandoned landfills.*** The TNRCC will focus efforts on inventorying these sites and assessing whether they pose a significant threat to public health or the environment.

Priorities Recommended for Legislative Action

While there may be legislative alternatives for dealing with many of the issues discussed in this plan, the goal of state government is to find solutions to problems at the lowest level feasible. Therefore, this plan only makes a few direct recommendations for legislative action.

- ***Funding for landfill remediation contingency fund.*** The legislature should authorize the use of balances in the Solid Waste Disposal Account or the reallocation of other funds for use by the TNRCC to provide resources for an already-authorized contingency fund to be used to address emergency situations at closed landfills that represent a threat to public health or the environment. *(Goal 7, Objective 2)*
- ***Funding for evaluation of closed landfills.*** The legislature should authorize the use of balances in the Solid Waste Disposal Account or the reallocation of other funds for use by the TNRCC to further evaluate priority-ranked closed landfills. *(Goal 7, Objective 1)*
- ***Amend the statutory waste reduction goal.*** Section 361.0201, Texas Health and Safety Code, directs the TNRCC to adjust the state waste reduction goal as necessary in the updates to the state MSW plan. The legislature should remove the out-of-date deadline and baseline year for

the state waste reduction goal contained in Section 361.422 of the Health and Safety Code, so that the statutory language does not conflict with the updated goal established in this plan. *(Goal 3, Objective 1)*

- ***Responsibility of counties along the border for providing MSW services.*** The legislature should consider the need to clarify the language of Section 232.030(c)(2), Local Government Code, added by H.B. 1001 in 1995, as it pertains to the responsibility of counties along the border with Mexico to adopt regulations for providing MSW services. *(Goal 9, Objective 1)*
- ***Standardization and clarification of the role and authority of solid waste management districts.*** If the legislature considers creating additional solid waste management districts, it should ensure that the authority and responsibilities of the solid waste districts are standardized and well understood. Any district approach should be consistent with the regional solid waste management plans, and the regional plans should be a factor in determining any district's area of jurisdiction. *(Goal 2, Objective 1)*

Priorities for Regional and Local Action

Some of the main priorities for which it is recommended regional and local entities focus their efforts include:

- ***Waste reduction goals.*** The number of local waste reduction programs continues to grow, and local governments should continue their efforts to establish an infrastructure in the state to support source reduction and recycling. Commercial-sector waste reduction initiatives should receive particular attention.
- ***Affordable MSW management capacity and services.*** Local governments should examine regional approaches to developing facilities and providing services, if MSW services are to remain affordable. Pilot projects and innovative approaches need to be tried to bring more complete coverage of MSW services to rural areas of the state. Regional and local liquid waste management needs should also be further evaluated and addressed.
- ***Illegal disposal and improper management of solid wastes.*** Local governments and regional governmental entities must take the lead in better identifying, assessing, and addressing problems with illegal disposal and improper management of solid wastes in their areas.

Priorities for Solid Waste Grant Funding

The TNRCC will work with the COGs to develop a grant work program for fiscal years (FY) 1998/1999 similar to the program for FY 1996/1997, with the COGs continuing to be funded to maintain a regional coordination role as well as administer a local pass-through grant program. The discussions with the COGs will include the joint development of a final list of authorized project categories for local grant funding during FY 1998/1999.

Based on the goals and objectives outlined in this plan, the TNRCC's priorities for local projects to be funded by solid waste grants in FY 1998/1999 include, in priority order:

- ***Local enforcement.*** Programs aimed at protecting public health and the environment by reducing the amount of nuisance dumping and illegal disposal of solid waste in the state, including consideration of improper liquid waste management practices.
- ***Source reduction and recycling.*** Projects and programs aimed at implementing local and regional source reduction and recycling programs, including composting, community recycling, workplace recycling, and commercial-sector waste reduction activities.
- ***Citizens' collection stations.*** Programs for providing regional MSW collection services to rural areas through the establishment of citizens' collection stations, including pilot projects to assist local governments in determining the most appropriate regional approach for collection stations.

Other types of projects will also be considered, such as household hazardous waste (HHW) collection and recycling, local planning and special studies, general public education, special cleanup events, and installation of scales at landfills. The TNRCC will also be considering possible options for using grant funds to help deal with liquid waste management needs, especially in rural and remote areas.

These priorities will be used by the TNRCC in its discussions with the COGs to determine the final authorized project categories. The COGs, in turn, will establish regional priorities for use of the grant funds, based on the state priorities and their regional solid waste management plans. The discussions with the COGs may result in additional project categories being identified.

Chapter 3:
Goals, Objectives, and Initiatives

Topic 1
Implementing Solid Waste Management Plans

Goal 1: *Ensure that the management, regulation, and control of MSW activities and facilities are conducted in the most efficient and effective manner, through proper planning at the most appropriate governmental levels.*

Objective 1: Provide updated information and recommendations concerning the management of MSW in Texas through the update of the state MSW plan.

1. As currently required, the TNRCC will update the state MSW plan on a biennial (two-year) basis. The planning information will be presented in two documents: a status report and a strategic plan.

2. The MSW plan will outline proposed priorities and policies supporting the implementation of adopted regional and local solid waste management plans over the next biennial period. The priorities established in the plan will serve as the basis for the guidelines and procedures for the next biennium's solid waste grant funding cycle.

Objective 2: Ensure that each solid waste planning region in Texas has in place an up-to-date regional solid waste management plan, through funding support for regular updates of the regional plans, with major plan amendments as needed.

1. The COGs should maintain and update the solid waste management data and information for their regions on an ongoing basis. Funding for this effort will continue to be part of the solid waste grants provided to the COGs.

2. The COGs should consider the need for amending their regional solid waste management plans only when conditions have changed enough that new regional goals and recommendations are necessary to adequately implement the plans, to include setting priorities for the solid waste grants programs. As a general rule, regional plans should not be considered for full amendment on less than a five-year basis.

Objective 3: Support the implementation of regional and local plans, through funding support to and through the solid waste planning regions, and other mechanisms in support of plan implementation.

1. The TNRCC will continue to view the regional solid waste management plans primarily as guidance documents and will not adopt plans containing detailed regulatory-type regional standards, such as facility siting and construction requirements that are more restrictive than state regulations.

2. Prior to the next biennial funding cycle, the TNRCC will coordinate with the COGs and other appropriate entities to jointly finalize the list of statewide project categories and solid waste grant funding standards. Input will be solicited from appropriate entities, especially private industry, on any problems or concerns with how the grant program was conducted in FY 1996/1997, and such concerns will be considered with developing the program standards for FY 1998/1999.

3. The TNRCC will continue to allow the COGs to determine region-specific funding categories and standards, consistent with the statewide standards and based on the priorities established in their adopted regional solid waste management plans.

4. The TNRCC will continue to allocate solid waste grant funds using a pass-through grant process through the COGs, with the COGs administering the local grant programs with oversight by the TNRCC.

Objective 4: Support the preparation and implementation of local solid waste management plans where the need for such plans is identified as a priority by the regional planning agencies.

1. The COGs should continue to evaluate areas within their regions that would be best served by development of a subregional solid waste management plan.

2. Local planning should be conducted according to subregional boundaries and needs as identified in the regional solid waste management plans. Only areas specifically designated as subregions or local areas with a priority need for additional planning should be considered for grant funding to assist in the local planning effort.

Topic 2
Landfill Issues and Assuring Disposal Capacity

Goal 2: *Prevent or minimize the level of contaminants released to the environment by ensuring the proper disposal of solid waste.*

Objective 1: Ensure that each MSW planning region of the state has available at least 10 years of remaining affordable disposal capacity.

1. The TNRCC will continue to work with the COGs to monitor the disposal capacity available to the state's planning regions, both within each region and from facilities outside of each region. The TNRCC will ensure that those regions with less than 10 years of available capacity, or that are approaching 10 years of capacity, have data and information necessary to plan for addressing their capacity needs.

2. The TNRCC will work with the COGs to monitor the affordability of the state's disposal facilities and other MSW management activities, through maintaining information on costs incurred and charges imposed by service providers. This information will be included in the updates to the state and regional MSW plans.

3. The COGs will continue to be funded to update their regional solid waste management plans on a biennial basis, to provide the data and information necessary for local governments to make decisions concerning their capacity needs. The regional plan updates should identify capacity and capacity needs, maintain information on MSW management costs and charges in the region, and identify subregional areas that may have less than 10 years of available disposal capacity.

4. Local governments should consider regional solutions to their MSW management needs in order to maintain sufficient, affordable landfill capacity. The COGs will continue to be funded to assist local governments through facilitating and coordinating regional arrangements for solid waste management. Final decisions on approaches to use will be up to the local governments involved.

5. If the legislature considers creating additional solid waste management districts, it should ensure that the authority and responsibilities of the solid waste district are standardized and well understood. Any district approach should be consistent with the regional solid waste management plans, and the regional plans should be a factor in determining any district's area of jurisdiction.

6. The TNRCC will continue its new *Solid Waste Assistance Partnerships* (SWAP) program to provide information and technical assistance to CLEAN CITIES 2000 members on establishing comprehensive programs for dealing with their solid waste management needs.

Objective 2: Assist in providing for needed disposal capacity by further defining mechanisms to resolve facility siting concerns and disputes.

1. The TNRCC will work with its MSW Advisory Council to further evaluate the appropriate roles and authority of the state and of local governments in addressing siting concerns beyond the technical considerations covered by current regulations, such as land use compatibility concerns. Any specific recommendations for changes to legislation will be communicated to the legislature.

2. The TNRCC will continue its alternative dispute resolution program, public and local government assistance programs, environmental equity programs, and other efforts to address concerns about facility siting and other permit issues.

Objective 3: Ensure consistent and effective implementation of MSW regulations.

1. The TNRCC will continue efforts to ensure that its rules, and the implementation of those rules, are consistent and in compliance with federal and state law.

2. The TNRCC will develop guidelines for financial assurance cost estimates and assist landfill owners and operators to understand the financial assurance requirements.

3. The TNRCC will work with landfill owners and operators to ensure that they are aware of the requirements associated with new air emissions standards and the potential costs involved.

Topic 3
Source Reduction and Recycling

Goal 3: *Reduce the amount of waste disposed of in MSW landfills by 40 percent, using 1992 landfill disposal tonnages as a base, and accounting for changes in population, import and export of solid waste, and other factors.*

Objective 1: Reauthorize the 40 percent waste reduction and recycling goal.

1. Section 361.0201, Texas Health and Safety Code, directs the TNRCC to adjust the state waste reduction goal as necessary in the updates to the state MSW plan. The legislature should remove the out-of-date deadline and baseline year for the state waste reduction goal contained in Section 361.422 of the Texas Health and Safety Code, so that the statutory language does not conflict with the updated goal established in this plan.

Objective 2: Promote the implementation of cost-effective waste reduction programs by Texas communities, businesses, and industries.

1. The TNRCC will continue to provide technical assistance and recognition programs in support of public and private waste reduction initiatives.

2. The TNRCC will continue to provide technical assistance and educational resources on centralized composting, Don't Bag It, and backyard composting.

3. The TNRCC will provide comprehensive community-based technical assistance through the new Solid Waste Assistance Partnerships program to local governments accepting a full partnership in the CLEAN CITIES 2000 program.

Objective 3: Promote the expansion of recycling collection, processing, and marketing through financial incentives and market-based initiatives.

1. The TNRCC will work with its MSW Advisory Council to consider additional incentive programs for composting and other alternatives for keeping yard trimmings out of landfills. Possible legislative changes may be considered, such as modifications to the disposal fee refund program for composting activities, and any specific recommendations will be communicated to the legislature.

2. The TNRCC will work with other state agencies on the Texas Recycling Market Development Board to implement its Action Plan, including creating markets through state procurement efforts.

3. The Texas General Land Office (GLO) will continue to actively implement its market development initiatives, as directed by the legislature in Senate Bills 1340 (1991) and 1051 (1993). These efforts will include the following:

   - Research and support services for the Texas Recycling Market Development Board
   - Free community workshops and other events targeting public-sector managers and purchasers to educate them about recycled-content purchase mandates and requirements, as well as to inform private-sector businesses of the full range of benefits associated with buying recycled products
   - Public service announcements throughout Texas to remind Texans of the importance of recycling and of buying recycled consumer goods
   - A statewide information network to educate the public of recycling opportunities in each region of the state

4. The TNRCC will broaden its efforts to provide accurate and timely information on sources and markets for recyclable materials.

5. The TNRCC will encourage local governments to create enterprise funds and variable-rate user fees for MSW services, where appropriate to the local MSW management structure.

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Objective 4: Ensure that regional and local decision makers have accurate information on the amounts and sources of materials disposed of and recycled so that they can develop cost-effective strategies to reduce municipal solid waste disposal by 40 percent.

1. The TNRCC will continue to develop improved systems for collecting and reporting information on disposal and recycling activity. Additional mechanisms for reporting by recycling entities will be evaluated, as well as possible expansion of the information provided by MSW landfill owners and operators on their annual facility reports.

2. The TNRCC will encourage landfill owners and operators to install and use scales at all MSW landfills. (The purchase and installation of scales will continue to be considered as a category for use of the solid waste grant funds.)

Objective 5: Ensure that regional and local decision makers have accurate information on the full costs and benefits of all solid waste management options, including source reduction and recycling programs.

1. The TNRCC will promote the adoption of full-cost accounting systems by local governments. Use of the TNRCC *MSW Services Full-Cost Accounting Workbook* (RG-127) will be encouraged and supported through continued training and educational efforts.

2. The TNRCC will encourage the COGs and local governments to develop software and training programs to complement the TNRCC *MSW Services Full-Cost Accounting Workbook*.

Topic 4
Local Collection of Municipal Solid Waste

Goal 4: *Ensure the proper, safe, and economical collection and transportation of solid waste for processing and/or disposal.*

Objective 1: Assist local governments in providing MSW management services by collecting, analyzing, and disseminating data and information about areas with inadequate collection services and possible options for providing services.

1. The COGs, through their regional planning efforts, should identify those areas in their regions that may be unserved or underserved by affordable MSW collection. The COGs should work directly with the counties, cities, and other local political subdivisions in those areas to identify alternatives for providing services, such as multi-jurisdictional agreements, use of existing districts or new districts, public-private partnerships, and other approaches.

2. The TNRCC will compile information from the regional plans about areas of the state that may be unserved or underserved by adequate and affordable collection options for residents. This information will be made available to local and regional officials, as well as legislative representatives of the affected areas, through the state and regional plan updates.

3. The TNRCC will include information about collection services in statewide outreach and assistance programs. Efforts aimed at assisting sparsely populated and rural areas will include information on addressing the collection needs in those areas.

Objective 2: Encourage and support efforts by local governments to ensure that affordable collection and/or disposal opportunities are available to all residents.

1. The TNRCC will work with the COGs to encourage establishment of pilot and demonstration projects for regional collection alternatives in rural areas. These activities will be considered as a category for use of the solid waste grant funds. Other federal and state funding sources will be researched by the TNRCC, especially as part of efforts targeting the border region.

2. The TNRCC will continue to review the regulatory requirements for transfer stations and other facilities, to make sure that the use of those alternatives is economical, consistent with protecting public health and the environment.

Topic 5
Dealing with Nuisance Dumping and Illegal Disposal

Goal 5: *Reduce the amount of nuisance dumping and illegal disposal of solid waste in the state.*

Objective 1: Identify and prioritize major illegal disposal sites in order to ensure that enforcement and technical resources are used in the most effective and efficient manner to protect public health and the environment.

1. The TNRCC will consider additional mechanisms to document the extent of nuisance dumping and illegal disposal statewide. Cooperative efforts will be encouraged with other state agencies, such as the Texas Department of Transportation, the Texas General Land Office, and the Texas Parks and Wildlife Department.

2. The TNRCC will work with the COGs and local governments to provide guidance on documenting and prioritizing nuisance problems and illegal dumping.

3. The COGs should be sure to address nuisance dumping and illegal disposal in the updates to their regional solid waste management plans.

4. The TNRCC will consider ways to further clarify the distinction between the types of illegal disposal activities that should be dealt with by the TNRCC and those activities to be dealt with by local authorities, and will provide guidance and information to the local governments on this issue.

5. The TNRCC will investigate the need for prioritization of state-lead cleanup activities at illegal disposal sites. The evaluation and prioritization program that is proposed to be developed for closed and abandoned landfill sites will be considered for prioritizing illegal disposal sites.

Objective 2: Encourage local governments and regional governmental entities to institute aggressive local enforcement programs.

1. The TNRCC will work in cooperation with local governments to continue enforcement actions aimed at closing and remediating illegal disposal sites in the state and preventing further development of these sites.

2. Local enforcement activities will continue to be considered as a category for use of the solid waste grant funds.

3. While the TNRCC will continue to pursue action against major illegal disposal sites, appropriate regional entities and local governments should take a primary role in instituting enforcement programs to identify, investigate, and prosecute illegal disposal activities.

4. Local governments in rural areas should consider establishing cooperative regional enforcement programs.

5. Local governments should evaluate whether many of their illegal disposal problems are a result of the lack of convenient collection and disposal services and should compare the costs of dealing with illegal disposal with the costs of providing more convenient and affordable services.

Objective 3: Continue to support and further implement statewide programs to increase the awareness of local governments and the public about the problems associated with nuisance dumping and illegal disposal.

1. Statewide public awareness programs aimed at littering and illegal disposal should continue. The Keep Texas Beautiful, Inc., programs to address littering and illegal disposal should also be supported.

Objective 4: Provide training and information in order to better prepare local officials to address nuisance dumping and illegal disposal within their jurisdictions.

1. The TNRCC will continue to work with other state agencies, and with the COGs and other local entities, to support workshops, education, and training for local officials on laws and programs dealing with nuisance dumping and illegal disposal. All local governments should consider assigning staff to attend available training and to provide follow-on training to other appropriate local staff.

Topic 6
Dealing with Liquid Wastes

Goal 6: *Prevent or minimize the level of contaminants released to the environment by ensuring the proper management of municipal sludge and other liquid wastes.*

Objective 1: Ensure that liquid wastes are being managed appropriately in the state.

1. The TNRCC will continue to consider the remaining regulatory changes proposed in the 1994 Strategy for Liquid Waste Management for ensuring that there are necessary state and local standards and requirements in place for safely managing liquid wastes.

2. The TNRCC will consider efforts to better coordinate the various agency program areas dealing with liquid waste management in the state.

3. The TNRCC will consider working with local governments to develop example and/or model ordinances and regulations to assist local governments in establishing adequate monitoring and oversight programs to ensure the proper management of liquid wastes.

4. Local governments should evaluate their local standards and requirements for dealing with liquid wastes and should take the lead in ensuring that appropriate controls are in place in order to protect their wastewater collection and treatment systems.

5. Local enforcement programs aimed at dealing with illegal disposal of waste should include a focus on improper disposal of liquid wastes. The TNRCC will work with the COGs to ensure that these efforts are considered when priorities for use of solid waste grant funds are developed and when those funds are applied to local solid waste enforcement programs.

6. The TNRCC will consider additional education and outreach efforts aimed at ensuring that local governments are aware of the need to properly manage liquid wastes and the mechanisms needed to do so.

Objective 2: Ensure that the state has adequate facilities and management alternatives for processing and otherwise dealing with municipal sludge and other liquid wastes.

1. The TNRCC will consider approaches for better identifying statewide liquid waste management needs and for updating the 1994 comprehensive strategy for dealing with liquid wastes. The TNRCC will include more complete assessments of liquid waste management in updates to the state MSW plan.

2. The COGs should consider the liquid waste management needs of their regions when preparing updates to their regional solid waste management plans. The TNRCC will work with the COGs to develop more specific regional planning guidelines for considering the liquid waste management needs of the regions and for developing comprehensive regional approaches for dealing with liquid wastes.

3. Local governments should develop comprehensive plans for dealing with their liquid wastes. Support for and encouragement of private-sector involvement in providing services should be an important component of any plan.

4. The TNRCC will continue to look at its regulations dealing with liquid waste management facilities to ensure that appropriate management approaches are encouraged. One approach that may be examined is making the use of Type VI (experimental) facilities easier for evaluating alternatives for dealing with liquid wastes.

5. Local governments should also study alternatives for dealing with their liquid wastes through recycling and reuse.

Topic 7
Dealing with Closed and Abandoned MSW Landfills

Goal 7: *Identify and locate all closed and abandoned MSW landfill sites, assess the risks associated with those sites to determine which ones pose existing problems or may pose potential problems, and ensure appropriate remediation and corrective action at those sites that pose a problem.*

Objective 1: Identify and document closed and abandoned MSW landfill sites, develop an appropriate risk assessment and ranking procedure, and evaluate the major sites to determine those that pose a substantial risk to public health or the environment.

1. The TNRCC will complete its initial inventory of closed and abandoned MSW landfill sites and verify the data collected, in cooperation with the COGs.

2. The TNRCC will develop risk evaluation criteria that could be used to determine the potential risk of identified sites and will go forward with such evaluations to the extent resources allow.

3. The legislature should authorize the use of balances in the Solid Waste Disposal Account or the reallocation of other funds for use by the TNRCC to further evaluate the priority-ranked closed landfills.

Objective 2: Establish programs based on state and local cooperative efforts to ensure corrective action at and remediation of closed MSW landfill sites that pose a substantial risk to public health or the environment.

1. The TNRCC will consider approaches for assigning risk and cleanup criteria for closed and abandoned landfills. In the case of older sites, identifying responsible parties may need to be less of a priority, and incentive approaches and cooperative efforts between the state, local governments, private companies, and private landowners may be the most appropriate approach.

2. The legislature should authorize the use of balances in the Solid Waste Disposal Account or the reallocation of other funds for use by the TNRCC to provide resources for an already-authorized contingency fund to be used to address emergency situations at closed landfills that represent a threat to public health or the environment.

3. Funding under the federal Superfund program might also be an option to assist in the remediation of a landfill site where an emergency situation exists and which is determined to meet the federal Superfund criteria, such as an old, unpermitted, or illegal landfill that is identified as having received hazardous materials. The TNRCC will investigate this option further as the agency proceeds with a more detailed evaluation of the problems present at the closed and abandoned landfills.

Objective 3: Implement the provisions of H.B. 2537, 74th Texas Legislature, to ensure that owners, lessees, and potential buyers of land that overlies a former MSW landfill will be fully aware of the presence of the closed landfill and its existing and potential risks.

1. The TNRCC will continue to implement a permitting program for new development and a registration program for existing structures located over closed landfill units.

2. The TNRCC will work with the COGs to further consider approaches for ensuring that information compiled on inventories of closed and abandoned landfill sites is made available to landowners and others that need the information. One approach that will be considered is an official registry of sites maintained at the state and/or regional level, rather than the current statutory requirement that the COGs submit inventory information to county clerks for entry into land deed records. Any specific proposals for legislative action will be communicated to the legislature.

3. The TNRCC will consider establishing additional public outreach and education programs for ensuring that landowners and the general public are aware of the requirements associated with building over closed landfill sites.

Topic 8
Dealing with Household Hazardous Wastes

Goal 8: *Promote efforts to reduce and minimize the generation of household hazardous waste (HHW) and increase the diversion of household hazardous waste for reuse, recycling, or proper disposal.*

Objective 1: Support efforts to provide residents of Texas access to alternatives for the collection and recycling or, where necessary, the proper disposal, of hazardous household products that would otherwise be discarded in the waste stream.

1. The TNRCC will evaluate mechanisms to reduce the costs associated with the disposition of HHW collected at community collection events and by collection facilities. Consideration will be given to ways to further encourage facilities to accept the collected materials.

2. The TNRCC will continue to promote the conduct of HHW programs through its Supplemental Environmental Projects (SEPs) program, whereby a respondent's willingness to voluntarily support such projects may be considered by the TNRCC in the settlement of enforcement actions.

3. The TNRCC, through its CLEAN TEXAS 2000 programs, will promote partnerships between local governments and industry for the collection of HHW for recycling or proper disposal.

4. The TNRCC will encourage and promote *take-back* programs (stewardship programs) by manufacturers of household products that may contribute to the HHW problem. State recognition through the Governor's Awards for Environmental Excellence and the TNRCC's CLEAN INDUSTRIES program can be used to encourage participation by manufacturers.

5. Programs for the collection of HHW, as well as local HHW education programs, will continue to be considered as a category for use of solid waste grant funds.

Objective 2: Sponsor, encourage, and support outreach and public education efforts aimed at HHW that will reach at least 50 percent of the population of Texas on a regular basis by the year 2000.

1. The TNRCC will continue its education and outreach activities for dealing with HHW, including HHW and Texas Country Cleanup collections and voluntary cleanup events. Other state HHW outreach and education efforts should also continue. The TNRCC and other agencies should coordinate their HHW outreach efforts with other related programs, including programs dealing with illegal dumping, water quality, groundwater protection, nonpoint source pollution prevention, and other activities.

2. Industry should work in concert with and support local governments to establish education and awareness programs focusing on responsible use of products that may contribute to HHW. Local governments, in turn, should seek support from the private sector for education efforts.

Topic 9
Municipal Solid Waste Management along the Border

Goal 9: *Support efforts to provide safe and economical MSW management services and reduce the level of illegal disposal in the border region of Texas.*

Objective 1: Help to ensure the provision of convenient and affordable solid waste management services to border areas lacking such services while minimizing illegal disposal.

1. The legislature should consider the need to clarify the language of Section 232.030(c)(2), Local Government Code, added by H.B. 1001 in 1995, as it pertains to the responsibility of counties along the border with Mexico to adopt regulations for providing MSW services.

2. Any study and analysis of the border region for the purposes of identifying priorities for federal or state funding should consider solid waste disposal and collection needs, as well as the need to address illegal disposal problems.

3. The TNRCC, through its Border Work Group, will consider developing a strategy to prepare input to the project funding resources created under the North American Free Trade Agreement (NAFTA). Attention may be given to sharing knowledge and technology with Mexico.

4. The TNRCC will consider possible approaches for local self-help programs in border communities to deal with MSW management needs. The TNRCC's Texas Small Towns Environment Program (Texas STEP), through which advice and guidance are provided to small communities for dealing with urgent water and wastewater problems, will be looked to as a model for a self-help program.

5. The TNRCC will work with the COGs and border-area counties and local communities to encourage pilot programs to demonstrate alternative mechanisms for providing MSW collection and recycling services to unincorporated areas. Regional collection alternatives, such as citizens' collection stations, should be evaluated. The border-area COGs should consider such approaches in developing the priorities for regional solid waste grant funding.

6. The TNRCC will also work with the COGs and border-area counties and local communities to encourage pilot programs for cleaning up existing illegal disposal sites, enforcement programs to prevent new sites, and other programs to facilitate proper disposal of MSW. In particular, regional enforcement programs, with a number of communities and/or counties conducting cooperative efforts, will be encouraged. The border-area COGs should consider such approaches in developing the priorities for regional solid waste grant funding.

Objective 2: Obtain accurate data and information concerning border-area solid waste in order to make appropriate decisions about the provision of MSW services.

1. The TNRCC will continue efforts in conjunction with other agencies to provide special environmental education and information programs to the border communities. State bilingual educational campaigns should be expanded to include all media forms. Educational efforts should be coordinated with the COGs, counties, and other entities to inform the colonia residents of the need for proper solid waste management and recycling.

2. State agencies should continue to organize volunteer environmental monitoring efforts along the border. The COGs, TNRCC regional offices, and other agencies can work with local and regional entities to support citizen action programs to help oversee the availability and quality of solid waste collection, recycling, and disposal services, especially in the colonia areas.

Chapter 4:
Issues Discussion and Analysis

Topic 1
Implementing Solid Waste Management Plans

Texas has in place a three-tiered planning approach, at the top of which is the statewide comprehensive municipal solid waste strategic plan (§361.020, Texas Health and Safety Code). This strategic plan is an update to the state MSW plan published in January 1995. Under the statutory planning requirements, the TNRCC will update the state plan on a regular two-year (biennial) basis.

Each of the state's 24 councils of governments were required to prepare a regional solid waste management plan that must conform to the state solid waste management plan (§363.062, Texas Health and Safety Code). All 24 of the state's COGs have completed their regional solid waste management plans, and those plans have been adopted by the TNRCC.

All local governments are also required to prepare a local solid waste management plan that conforms to the regional plan for that area (§363.063, Texas Health and Safety Code). However, because development of the plans is predicated on the availability of state grant funding (§363.0635, Texas Health and Safety Code), and not every local government in Texas needs a local solid waste management plan, only three local plans have been prepared and adopted by the TNRCC to date. Three more plans are pending completion.

Issue 1. The Role of MSW Plans in Texas

What Is the Issue?

At the state level, the state MSW plan itself is not intended as a regulatory document. For instance, in accordance with statutory requirements (§361.0201(g), Texas Health and Safety Code), "the state plan may not allow the TNRCC to require a local government to perform any act not specifically required by state law or TNRCC rule." Regional and local solid waste management plans, however, must still conform with the policies established in the state plan (§363.062, Texas Health and Safety Code).

Once regional and local plans are adopted by the TNRCC, public and private solid waste management activities and state regulatory activities must conform to those plans (§363.066, Texas Health and Safety Code). This conformance provision has led to some questions about the intended role of the regional and local plans in guiding the management of MSW in the plan areas; including whether the plans should be allowed to establish regional or local standards and requirements, or whether they should just provide guidance and overall goals and objectives for programs in each planning area.

In considering this conformance provision, the TNRCC has not considered it feasible to try to enforce 24 different sets of regional standards or requirements established in the regional plans

which would differ from, and may possibly exceed, state regulations pertaining to MSW management. Consequently, the TNRCC has viewed the plans as guidance documents that should identify proactive measures for achieving regional and local goals, rather than attempt to establish restrictions on MSW management activities. Therefore, the TNRCC has not adopted plans that contain *regulatory* or *restrictive* measures, such as provisions that might dictate landfill construction standards or specific siting criteria.

What Can Be Done?

Currently, 40 or more states conduct statewide MSW planning, and 35 states also require regional and/or county planning.[1] In some cases, counties are allowed to form together to prepare a multi-county plan. Several approaches emerge in the implementation of these plans:

- In most cases, the regional plans serve as guidance documents, with continued oversight and coordination by the regional planning agencies
- In only a few cases, regional planning entities are provided additional authority and responsibilities to implement the plans through their designation as regional districts
- As is the case in Texas, an approach also used in many of the states is to utilize state grant funding to conduct programs and projects to implement the regional and local plans

The use of grant funds and the outlining of recommendations from the plans to assist local decision makers would still seem to be the most appropriate approach. If the legislature intends for the regional plans to have more regulatory-type authority in the management of MSW in the state, more complete direction would probably need to be provided.

Issue 2. Policy for Local Solid Waste Management Plan Development

What Is the Issue?

The limitation on the availability of solid waste grant funding has made it necessary for the TNRCC and the COGs to fund development of local plans only in those areas identified in the regional plans as needing priority attention. The issue that needs to be considered is whether this policy approach should continue or whether local plan development should be a higher priority.

What Can Be Done?

Texas' three-tiered planning approach appears to be unique. Most of the states with regional and/or county planning requirements include consideration of local issues in the county or regional plans.[2] Local planning, while recognized as an important component of solid waste planning, has not been mandated in many states as it has in Texas.

The TNRCC's policy towards funding the local and subregional plans has been based on the coordination of local planning by the COGs and their identification of those areas most in need of a local plan. The TNRCC's funding priorities have focused on completing the regional plans and

then establishing the mechanisms at the regional level to coordinate and help fund local projects to implement the regional plans.

Given the limitations on funding, and the importance of continuing regional coordination of any planning efforts, the current approach toward local planning would appear to be the most appropriate, with funding assistance based on determinations by the COGs of where local planning is most needed.

Issue 3. Priorities for Solid Waste Grant Funding

What Is the Issue?

Use of the solid waste grant funding is a primary mechanism by which the state supports the implementation of the regional solid waste management plans. Those grants are intended to support local and regional solid waste projects consistent with regional plans approved by the TNRCC and to update and maintain those plans. This plan needs to outline the overall guidance and approach for the next biennial (FY 1998/1999) funding program.

What Can Be Done?

Priorities for the FY 1996/1997 solid waste grant program were based on an evaluation of the needs outlined in the 24 regional solid waste management plans, as well as the needs identified by the 1995 state MSW plan. The priority activities were grouped into two main categories: regional coordination and plan implementation projects. The alternatives for the next round of grant funding should focus on any needed changes to the previous biennial program.

The regional coordination activities conducted by the COGs ensure continued oversight of the implementation of the adopted regional plans. Activities funded under this function included:

- Administering the regional solid waste pass-through grants
- Maintaining a solid waste advisory committee for the region
- Providing technical assistance and other support services to the region
- Assisting the TNRCC in public outreach and training
- Reviewing solid waste permit applications for conformance with the regional plan
- Maintaining a solid waste information and resource center for the region
- Updating the data and information in the regional plan
- Assisting the TNRCC with an inventory of known closed or abandoned landfills

For the implementation of projects, the TNRCC identified a wide range of eligible grant categories, based on the priorities from the state MSW plan, the state's waste reduction goals, and the needs identified in the adopted regional plans. The COGs, in turn, selected those project categories that address the regional needs as identified in their regional plans. The priority project categories were:

- Waste reduction and recycling, including workplace recycling and composting

- Household hazardous waste management
- Local enforcement
- Public education programs
- Installation of scales at landfills
- Citizens' collection stations
- River and lake cleanups
- Local plans and technical studies (no more than 10 percent of a COG's total annual grant could be applied to local planning projects)

Certain types of projects were also deemed ineligible by the TNRCC. These included funding for projects related to landfilling or other solid waste disposal activities, with the exception of installing scales at landfills, and any project requiring a permit from the TNRCC. The purpose of these restrictions was to focus the funding efforts on the priority areas of waste reduction and local enforcement.

By mid-1996, over 250 implementation projects had been selected for funding by the COGs, accounting for over $7.5 million of the $10.2 million allocated to the COGs in FY 1996.

For FY 1998/1999, the same approach as used for the FY 1996/1997 program can be considered. It is still important that the COGs be funded to maintain a regional coordination effort. At the same time, the majority of grant funding could again be passed through for local solid waste projects.

The process for developing the next biennial grant project categories and standards will need to include input and cooperative efforts between the TNRCC, COGs, other local and regional governmental entities, private industry, and other groups. The statewide priorities established by this plan will serve as the first step in that process.

Topic 2
Landfill Issues and Assuring Disposal Capacity for Texas

The 1984 Hazardous and Solid Waste Amendments to the federal Resource Conservation and Recovery Act (RCRA) directed the EPA to implement regulations so that facilities that may receive hazardous household waste or small-quantity generator hazardous waste are protective of human health and the environment. These amendments, commonly referred to as the new Subtitle D requirements, resulted in substantial increases in the complexity and restrictiveness of the standards for MSW landfills and have had a dramatic effect on the number of MSW landfills in the United States and in Texas. By late 1996, the number of open MSW landfills in Texas had dropped to 224, 186 of which were still actively receiving waste. This is down from a total of 884 permitted MSW landfills in 1986.

Even with the large number of facility closures, Texas and the country as a whole have seen a steady rise in available MSW landfill capacity. The estimate of landfill capacity in Texas at the end of 1994 was over 22 years. The reasons for this trend are, in part, because existing regional landfills have increased their size through expansions (both horizontally and vertically) and the new regional landfills being constructed are often permitted for larger capacity than was seen in the past.

Issue 1. Increasing Disposal Costs

What Is the Issue?

Disposal costs are increasing, although the fees charged for landfill disposal in Texas are still some of the lowest in the country (Table 1). Of the 257 landfills open at the end of 1994, 49 reported a per-ton tipping fee averaging $28.56, a 49 percent increase from 1993. A greater number of landfills (186) reported tipping fees based on a cost per cubic yard, with an average fee of $6.02 per cubic yard.

This may mean, however, that Texas will continue to see a steady rise in disposal tipping fees as landfills begin to pass on the costs of compliance with the new regulatory requirements.

There is also a concern about the uncertainty of the effects of fewer facilities being in control of more of the waste stream. This uncertainty is fostered by the fact that a greater percentage of the landfill capacity is controlled by private companies. At the end of 1994, 76 of the state's open MSW landfills were private, accounting for 48.4 percent of the available landfill capacity in the state. These private facilities received 60.2 percent of the state's solid waste.

Table 1
Landfill Tipping Fees in the United States ($/Ton)

Region	1985	1986	1987	1988	1990	1992	1995
Northeast	12.66	17.11	52.41	61.11	64.76	65.83	73.17
Mid-Atlantic	16.99	22.08	26.32	33.84	40.75	47.94	45.68
South	3.24	5.76	13.13	16.46	16.92	22.48	28.50
Midwest	7.23	11.75	16.42	17.70	23.15	27.10	31.15
South Central	**7.24**	**7.61**	**10.17**	**11.28**	**12.05**	**12.53**	**20.30**
West Central	5.36	6.21	7.23	8.50	11.06	12.62	23.29
West	10.96	11.10	13.92	19.45	25.63	27.92	37.69
National Average	8.20	10.82	16.11	19.12	23.01	26.32	32.19

Source: Edward W. Repa and Allen Blakey, "Municipal Solid Waste Disposal Trends - 1996 Update", *Waste Age* (May 1996), 180.
Regions:

Northeast: (Conn., Mass., Maine, N.H., N.Y., R.I., Vt.)
Mid-Atlantic: (Del., Md., N.J., Pa., Va., W.Va.)
South: (Ala., Fla., Ga., Ky., Miss., N.C., S.C., Tenn.)
Midwest: (Ill., Ind., Iowa, Mich., Minn., Mo., Ohio, Wis.)
South Central: (Ariz., Ark., La., N.M., Okla., **Texas**)
West Central: (Colo., Kan., Mont., Neb., N.D., S.D., Utah, Wyo.)
West: (Alaska, Calif., Hawaii, Idaho, Nev., Ore., Wash.)

What Can Be Done?

Historically, Texas has not imposed state-level requirements on the business aspects of landfills and landfill operation, such as the fees charged. Some of the regulatory approaches that have been used in some areas of the nation include:

- Regional governmental control, such as districts, allowing for more local government oversight of landfill operations and costs
- Legislation allowing for local governmental flow control, to direct where and how waste is managed, and how much is charged (discussed further under Issue 4)
- Public utility–style regulation of disposal
- Other similar approaches

However, given that disposal charges in Texas are still relatively low compared with other states, the focus of Texas' efforts may appropriately be placed on those activities that support keeping the landfilling costs as low as possible, without imposing major new governmental controls.

Issue 2. Out-of-State Wastes

What Is the Issue?

The comparatively low average costs of disposal in Texas also mean that the state could potentially become a target for importation of additional waste from states where tipping fees are much higher. Currently, Texas imports only around 100,000 to 300,000 tons of MSW per year for disposal in the state's MSW landfills, accounting for only 1 percent or less of the total landfill disposal in Texas.[3]

What Can Be Done?

To deal with the *importation* question, some states have imposed importation restrictions, based on the state's need to ensure the viability if its own capacity. The recent national trends in waste flow across state lines has been primarily from the Northeast to the Midwest, causing Midwestern and Southern states to look at restrictions on waste importation. These restrictions have taken a variety of forms:

- Prohibitions on the importation of out-of-state waste
- Limitations on the amount of waste that can be imported
- Fees placed on out-of-state waste at a significantly higher rate than in-state waste
- Prohibition of the transportation of waste into a particular county from "other counties and locations"[4]

Texas has not historically embraced these approaches, although the issue of out-of-state wastes continues to be raised. At the federal level, courts have found some of these restrictions to be a violation of the Commerce Clause of the United States Constitution (Article I, §8, cl. 3), which places the power to regulate interstate commerce with the Congress. As a result of some of the court decisions, Congress has recently considered legislation to further define the authority of states in controlling solid waste importation. For instance, in May 1995, the U.S. Senate passed a bill (S. 534) that would allow governors to prohibit the disposal of out-of-state MSW or to place limits on the importation of MSW, but a similar bill was defeated in the House in January 1996.[5]

The discussion of what to do about out-of-state solid waste, in terms of its possible effect on in-state capacity, may still be premature, since Texas does not currently import a significant amount of waste. The appropriate approach would be to continue to closely monitor the effects of out-of-state waste, through the biennial state MSW plan, to identify whether and when more specific action may be needed at the state level. The congressional debate over possible legislation concerning solid waste importation and flow control authority will also be watched carefully.

Issue 3. Dealing With Siting Concerns

What Is the Issue?

Landfills, like other disposal facilities, are often viewed as LULUs (Locally Undesirable Land Uses), and community groups often feel forced to take a NIMBY (Not in My Backyard) stance.[6] This often leads to contentious, lengthy, and costly debates about the compatibility of a facility with the surrounding community or the equity of siting a facility in a particular area, even when the technical aspects of a permit application may have been determined satisfactory by the TNRCC. These considerations are difficult for the TNRCC to evaluate in a standard, statewide approach.

What Can Be Done?

Some approaches used in other states to deal with local siting concerns and issues of need include apportioning the waste disposal needs and facilities by county or region. Arkansas, for instance, authorizes its regional solid waste management districts to evaluate the need for a new facility when a permit application is filed.[7]

Further regional control over facility siting is also used in some states. The Arkansas districts are authorized to be more restrictive than the state in siting guidelines, and may evaluate whether an application meets the district's criteria for the establishment of a landfill.

From a state perspective in Texas, it may be difficult to recommend major new legislative or regulatory approaches to siting decisions that would place more authority at the state level for examining land use compatibility issues. Settlement of such issues may often be more appropriately addressed at the local and regional level, under the authority already given to local governments.

The TNRCC can work with its MSW Advisory Council to further evaluate what the role of the TNRCC and the role of local governments should be in affecting facility siting decisions based on factors such as land use and socioeconomic considerations.

The TNRCC has also moved to establish additional assistance and support resources for both the regulated community and those communities and groups that are affected by facilities. Some of these programs include: a Local Government Assistance Program, Public Assistance and Environmental Equity programs, a public interest counsel, a new Alternative Dispute Resolution Office, and other outreach and education programs.

Issue 4. Approaches for Assuring Regional and Local Capacity

What Is the Issue?

Although Texas as a whole appears to have sufficient landfill capacity, this may not be the case in all regions of the state. As also noted earlier, while disposal fees are not yet prohibitively high, rates may continue to increase, and possibly more so in certain areas.

Also, the trend toward consolidation of control over solid waste disposal capacity, including increased privatization, has created some uncertainty at the local level about the possible effects on the availability and price of solid waste management services and facilities. Many communities may be uncertain of their role in assuring that services are provided to residents: *Should they get out of the business, or do they need to retain control over their MSW management systems?*

What Can Be Done?

Regional approaches are often at the top of any list of alternatives for local entities to consider for providing for their MSW disposal needs. For the most part, regionalization options are currently available in Texas and can be considered by the regions and local communities as needed. Regionalization can also be accomplished through nonprofit organizations, interlocal agreements, public/private partnerships, and similar regional arrangements. Especially in the rural and sparsely populated areas of the state, such as West Texas, regional arrangements through agreements between governments and partnerships with private companies need to be considered.

As discussed under Topic 1, some states have gone further towards *imposing* regionalization, through statewide coverage by solid waste districts and other mechanisms. Indiana and Ohio, for instance, require their counties to become part of multi-county districts, or to form individual county districts.[8] Other states, such as Arkansas, also allow for the establishment of regional solid waste management districts, which may take on the solid waste management responsibilities of the local governments.[9]

An advantage of these statewide regionalization measures is that they provide for a consistent, standard approach to assuring that there are responsible governmental entities covering the entire state, able to generate the resources and to establish controls necessary to provide for the capacity needs of the region.

A disadvantage of imposing statewide regionalization, however, is the potential loss of control by local governments over their solid waste systems, especially if those local entities later do not agree with the actions of the regional entity. Private solid waste management companies also may have concerns about having to deal with a new level of regional government that may impose additional restrictions and control over solid waste management activities in the regional jurisdiction.

Texas has historically relied on local decision making concerning options for regionalizing solid waste management. Therefore, an appropriate role of the state is in supporting efforts to bring entities together to look at regional options. These types of arrangements are already discussed in the regional solid waste management plans prepared by the COGs, and the TNRCC continues to support the regional plan development and implementation efforts. Continued regional solid waste coordination by the COGs is important to this effort.

Flow control authority is another approach that has been used in a number of other states. Flow controls are generally defined as legal provisions that allow state and local governments to designate where MSW must be taken for processing, treatment, or disposal.[10] Flow controls became popular to ensure a steady flow of waste through government-funded waste management facilities,

particularly waste-to-energy facilities and high-technology materials recovery facilities (MRFs). Flow controls are used to ensure receipt of enough waste to generate sufficient revenue to pay the debt service for these facilities.[11] To a lesser extent, flows controls are seen as a way for helping to ensure the viability of local or regional landfill capacity, by directing to which facilities waste may be taken or by limiting the import or export of wastes within certain jurisdictions.

Recent court decisions, however, have ruled against flow controls imposed at the state or local levels. The most recent case receiving much attention was the Supreme Court decision in the case of *C&A Carbone, Inc., v. Town of Clarksville, 1994*. The town's flow control laws were overturned on the basis of the Commerce Clause of the U.S. Constitution.

Thirty-five states provide some form of flow control authority to their local governments.[12] In support of those states and local government, the recently proposed federal legislation discussed under Issue 2 above (S. 534), would have also *grandfathered* those municipalities currently exercising local flow control authority, in certain cases. Discussion on this issue continues at the federal level, and there may be continued efforts to look at some form of flow control legislation.

Although flow controls are still being discussed nationally, it has not yet been raised as a major issue in Texas, since many of the situations leading to local governmental use of flow control, such as governmental operation of waste-to-energy facilities and major materials recovery operations, have not been prevalent in Texas. Therefore, this plan does not propose the need to study these issues in further depth at this time, although the status of federal flow control and solid waste importation legislation will continue to be monitored.

Issue 5. Current and Emerging Regulatory Initiatives

What Is the Issue?

Important to the discussion of landfill capacity, and keeping the costs of that capacity affordable, are the current and emerging regulatory initiatives that will affect MSW landfills. Two main issues deal with continued implementation of Subtitle D and establishment of new air emission requirements for solid waste facilities.

A remaining Subtitle D issue is the financial assurance requirements. By April 1997, landfill owners and operators will be required to post financial assurance for their facility for both the closure and the postclosure care, pursuant to the Subtitle D requirements. The TNRCC regulations will incorporate the EPA standards for financial assurance by landfill owners.

New air emission requirements also need to be considered by landfill owners and operators. The EPA finalized new federal standards for MSW landfill air emissions on March 12, 1996. These new standards, set forth in Title 40 Code of Federal Regulations Part 60 Subpart WWW, are known as the New Source Performance Standards (NSPS) and the Emissions Guidelines.

The NSPS rule applies to landfills that were constructed, modified, or began accepting waste after May 30, 1991. Under the NSPS, larger MSW landfills may be required to install gas collection and control systems.

The Emissions Guidelines apply to existing landfills, defined as those that accepted waste at any time after November 8, 1987, and, even though they may be closed, still have additional design capacity available for future waste disposal. Existing landfills must file a design and emission report, and will be subject to the same requirements as under the NSPS for large landfills to install gas collection and control systems.

Initial set-up costs for a landfill that needs to drill collection wells and route landfill gas to a suitable energy recovery or combustion device are estimated to run as high as $2.2 million. It is estimated that the new rules will affect about 10 percent of the state's largest existing landfills and about the same percentage of new landfills that may be developed.

In addition, some landfill operators may need to submit an annual emissions inventory, and may be required to pay fees based on the amount of air emissions from their site. Emissions inventory data are used as a basis for decision making in air quality planning. Landfill operators are required to submit an inventory based on the amount and type of air emissions, as well as the location. Operators of landfills that do not meet NSPS standards may be required to submit an annual emissions inventory, particularly in areas that do not meet federal air quality standards.

What Can Be Done?

The new standards and requirements are required under the federal rules. The alternatives for Texas center on ensuring that resultant state rules are implemented in a consistent and appropriate manner. Importantly, the TNRCC needs to make sure that owners and operators are aware of the potential effects of the rules, and work with them to determine the best approaches for meeting the new requirements.

As part of implementing the financial assurance requirements, because there are no regulatory requirements for what constitutes a *good cost estimate* upon which to base the financial assurance needs, the TNRCC is considering an implementation plan to include development of the following:

- Cost estimation guidance
- A computerized tracking system that relates partial closure with facility updates to financial assurance
- A policy relating to partial facility closures for release of financial assurance

The TNRCC also expects to soon have regulations in place to implement the Emissions Guidelines. The TNRCC will offer technical assistance to operators of affected sites and will help them in the preparation of the annual inventory. The TNRCC is also attempting to use data reported under the NSPS requirements for annual emissions inventories.

Topic 3
Source Reduction and Recycling

What Is the State's Source Reduction and Recycling (Waste Reduction) Policy?

In 1987, the 70th Texas Legislature enacted H.B. 2051, amending the Texas Solid Waste Disposal Act to establish a hierarchy of preferred methods for managing the state's MSW. Subsequently, the hierarchy provisions were amended to state that "it is the state's goal, through source reduction, to eliminate the generation of municipal solid waste and municipal sludge to the maximum extent that is technologically and economically feasible."

Senate Bill 1340, enacted in 1991, expanded the state's policy for dealing with MSW by establishing a goal of recycling at least 40 percent of the state's total MSW stream by January 1, 1994. In 1993, because of difficulty in measuring the rate of recycling, the legislature changed the goal to a 40 percent reduction in the amount of MSW disposed of in Texas, adjusted for population growth, through source reduction and recycling, using 1991 as a base year.

Section 363.0201, Texas Health and Safety Code, directs that the TNRCC review this goal and make adjustments to the goal as necessary in the state MSW plan. Accordingly, the *1995 Municipal Solid Waste Plan for Texas* retained the 40 percent reduction goal, but did not establish a specific target date for achievement of the goal. Rather, the plan indicated that a new target date would depend upon the level of additional measures that might be imposed by the legislature.

The 1995 plan also changed the base year for the goal to 1992. This was done for three reasons: reporting requirements were revised in 1992 to obtain more detailed and accurate information from disposal facilities; many of the state-sponsored waste reduction programs were not fully operational until 1992, when those programs could be expected to start having an effect; and 1992 appears to have been a peak year for MSW landfill disposal amounts, at least in terms of per capita disposal rates.

With these changes to the goal made in the state plan, it may be appropriate for the legislature to remove the statutory deadline and base year for the goal, since those dates are not current and have been superseded by the revised goal in the state MSW plan.

Has the State Reached its Waste Reduction Goals?

Texas is not yet approaching attainment of the 40 percent waste reduction goal. Texas saw a drop in total per capita disposal from 6.7 pounds per person per day in 1992 to 6.5 pounds per person per day in 1994—about a 3 percent reduction from the 1992 rate.

The EPA estimates that recycling and composting recovered 24 percent of MSW in 1994 nationwide, up from 21 percent in 1993 and 17 percent in 1990.[13] However, considering that much of the state's waste is not weighed at the MSW landfills and the disposal amounts are estimated, and also considering the current limitations on obtaining data from recyclers, the TNRCC does not have a reliable estimate of the rate of recycling in Texas. Any recycling rate estimates that could be made

for the state would be uncertain at best, and the TNRCC is currently working with the Recycling Coalition of Texas, the Texas Association of Regional Councils, and private-sector recyclers to explore voluntary options for better determining the rate of recycling in the state.

Why Should Waste Reduction Be a Priority?

The state is not facing a landfill capacity shortage. However, the arguments in favor of source reduction and recycling have never been based solely on the issue of landfill capacity. Rather, there are a broad range of reasons why the state has, and needs to continue to, place an emphasis on source reduction and recycling as the preferred methods on the MSW management hierarchy. Some of the main reasons can be grouped into two main categories—economic benefits and environmental considerations. A few of the major issues under these categories are outlined below.

Economic Benefits of Waste Reduction

The costs to site and build new landfills and to transport and bury solid waste in those landfills are all increasing rapidly. At the same time, waste reduction and the recycling industry can add to the economy, for when materials are reused or recycled, new business and employment opportunities are created. Some of the benefits of recycling are listed below.

- *Economic growth and job creation.* Recovering materials promotes business and employment in Texas, adding 20,000 jobs and an estimated $2.9 billion in value to the state's economy.[14]
- *Savings by business.* Many businesses have seen a large reduction in their waste disposal costs through instituting a recycling program. For instance, Texas Instruments saves more than $500,000 annually in disposal costs through recycling, and has reduced its solid waste by 65 percent from 1990 to 1996.[15]
- *Savings in disposal costs.* The city of Arlington was paying $20 per ton for disposal in 1991, but by 1993 those costs had risen to $30 per ton. Similarly, the city of Plainview paid $7 per ton in 1991, and was paying $41 per ton by the end of 1993.[16]
- *Savings in transportation costs.* Stricter federal landfill regulations caused many of the smaller facilities to close, resulting in longer haul distances to regional landfills.
- *Conservation of landfill capacity.* Reducing waste extends landfill life and delays the need for siting of additional landfills.
- *Increases in efficiency of solid waste management operations.* Some communities have reduced the frequency of waste collection and added collection of yard trimmings and recyclables, increasing efficiency and reducing the amount of waste disposed of.

Environmental Benefits of Source Reduction and Recycling

Source reduction and recycling also save nonrenewable resources, conserve land, use less energy, and produce less pollution. Generally, substituting recyclables for virgin materials reduces waste and prevents pollution in both manufacturing and energy production. Finite natural resources, including materials and energy, are conserved through recycling and to an even greater degree through source reduction. These benefits include the results listed below.

- *Pollution prevention.* For most industries, use of recovered or secondary materials produces less waste and pollution than using virgin feedstock.
- *Resource conservation.* Reducing wastes and using recovered materials conserves natural resources.
- *Energy conservation.* Using secondary feedstock in place of virgin aluminum reduces energy consumption by 90 to 97 percent; using recycled steel reduces energy consumption by 47 to 74 percent; and using recycled paper in place of virgin pulp decreases energy consumption by 23 to 74 percent.[17]

Issue 1. Are Mandatory Measures Needed?

What Is the Issue?

By 1995, at least 44 states had set recycling or waste reduction goals.[18] In addition, based on 1994 information, 39 states and the District of Columbia have some form of statewide recycling law: over 20 states require some form of planning; seven or more states mandate source separation of one or more recyclables from solid waste; and 12 states require an *opportunity to recycle*.[19]

Numerous states, including Texas, have also instituted some form of ban on the disposal of certain materials. Of these, 23 states have banned certain yard trimmings from disposal.[20] Further, 12 states have instituted some form of container deposit legislation.[21]

In 1993, The Texas Legislature enacted S.B. 1051, which included a directive for the TNRCC to convene a task force consisting of representatives of the TNRCC, the General Land Office, local governments, the Municipal Solid Waste Management and Resource Recovery Advisory Council, and the commercial solid waste disposal industry. The task force, named the *40% Task Force*, was convened to consider recommendations for a plan for implementing a yard trimmings disposal ban if the state did not meet the 40 percent waste reduction goal by January 1, 1994.

The 40% Task Force recommended a four-phase approach to waste reduction that incorporates a series of increasingly aggressive waste reduction measures if the state, as a whole, fails to reach certain benchmarks by specified dates.

Phase I
Beginning September 1, 1995.

- Increased reporting accuracy, including scales at landfills
- State-level technical assistance on full-cost accounting
- State market development initiatives
- Grants equity to maximize waste reduction impact
- State and local public education campaigns

Phase II
Beginning September 1, 1997.

- State disposal fee rebate program for community waste reduction
- Required local solid waste reduction plans
- Required municipal solid waste rate structures and enterprise funds
- Required state and local commercial waste reduction initiatives

Phase III
Would become mandatory January 1, 2000, unless the state per capita disposal rate was reduced by 20 percent from the 1992 baseline year.

- Required variable disposal fees
- Required municipal composting programs
- Required residential recycling

Phase IV
Would begin September 1, 2003, if the TNRCC determined that the potential still exists for significant reduction in the amount of yard trimmings entering Texas' landfills.

- Yard trimmings disposal ban

Information from other states, and the current progress within Texas toward reaching waste reduction goals, would indicate that 40 percent is an aggressive goal. The question of whether mandatory measures should be further considered rests with timing and need.

What Can Be Done?

Texas can achieve a significant reduction in the amount of solid waste entering the state's MSW landfills through voluntary measures. It may ultimately be up to the legislature, however, to decide whether the timing for achieving the waste reduction goals necessitates further, more mandatory measures. Because Texas is not facing a disposal capacity crisis, mandatory disposal bans and *opportunity to recycle* requirements may seem less realistic for the state.

Issue 2. Impediments to Reaching the Waste Reduction Goals through Voluntary Efforts

What Is the Issue?

While mandates and state-imposed requirements may help to establish recycling programs more quickly, Texas currently relies primarily on voluntary measures for working towards achieving its waste reduction goals. Voluntary measures can have significant impacts when they are designed to overcome some of the following barriers to change:

- Lack of public awareness of recycling opportunities
- Lack of convenient recycling opportunities
- Lack of information on the full costs of MSW services for public officials to make rational decisions on the cost-effectiveness of various strategies, and the lack of economic incentives to change public behavior

- Instability of recyclables markets—market fluctuations and shortfalls
- Lack of recycling opportunities in small businesses

What Can Be Done?

The 40% Task Force outlined a number of options for encouraging waste reduction activities in Texas. Other recent reports and studies have also dealt with Texas waste reduction issues, including a study, entitled *Market Development for Texas Recyclables* (AS-37), commissioned by the TNRCC in 1994 to examine possible strategies for the market development for recyclables in the state. The Texas General Land Office also published two market development studies, *Texas Recycles: Marketing Our Neglected Resources* in 1992 and *Texas Recycles 2: Marketing Our Neglected Resources* in 1994.

These and other state and national reports outline a variety of approaches for encouraging waste reduction. Some of the possible approaches are outlined below.

- *Determine the costs of MSW services, using a standardized system of full-cost accounting.* By incorporating future and indirect costs into current budget planning, a full-cost accounting system encourages cost-effective decisions and ensures a continuous generation of capital.
- *Determine cost-based rate structures and establish enterprise funds.* Cities can set their residential solid waste fees to recover the full cost of providing solid waste services. Operating solid waste services from an enterprise fund separate from the general fund makes it easier for a community to track its fiscal performance and correlate its service level with revenues and expenses. The TNRCC has developed a full-cost accounting workbook for MSW services which is available to all local governments, and the agency encourages its use through workshops and educational efforts.
- *Use variable residential disposal fees.* The 40% Task Force recommended unit-based pricing, or *pay-as-you-throw*, systems for solid waste collection and disposal to give each customer a financial incentive to reduce waste, making billing for waste management services on a par with that for other utilities. For the most part, such systems can be implemented in Texas, although a few systems that do not use direct curbside collection of solid waste may have difficulty in implementing a variable collection fee approach.
- *Increase state and local commercial waste reduction initiatives.* Because commercial waste typically makes up more than half of all MSW generated in Texas, commercial recycling initiatives can have a major effect on achieving waste reduction goals.
- *Promote state market development initiatives.* While the number of end users of recyclable materials continues to grow, not all regions of the state have access to developed markets. Efforts by the Texas Recycling Market Development Board (RMDB) and its member agencies, especially the GLO and the TNRCC, are focused on monitoring and addressing issues affecting markets for recyclable commodities. The GLO's Buy Recycled initiatives encourage business, industry, and government to purchase recycled products.
- *Continue waste reduction and recycling grants to local governments.* Grant start-up funding has been both an incentive and a means for new programs as well as expansions of existing waste reduction and recycling programs.

- *Promote complementary state and local public education campaigns.* Recognizing that public education is key to any successful waste-reduction effort, continuation of the state public awareness and education program is needed, along with implementation of complementary local efforts based on the needs and abilities of individual communities.
- *Expand compost refund payment system to support publicly funded compost operations.* S.B. 1051, enacted in 1993, provided for a 15 percent refund of the state solid waste disposal fee to disposal facilities with approved yard trimming composting operations in place. Currently, composting facilities that are located away from landfills are eligible for the refund only through landfills. Providing direct financial support to communities would help foster more of these facilities.
- *Expand the compost refund to include use of mulch made from grinding yard trimmings.* The 15-percent refund of the state solid waste disposal fee is *only* for compost operations. Yard trimmings do not necessarily have to be composted to be used beneficially. Markets for mulch exist on public and agricultural lands. Extending financial support through expansion of the compost refund to operations turning yard trimmings into mulch can help close the gap between generators and users.
- *Develop local solid waste reduction plans.* Communities could be asked to submit municipal waste reduction plans to the COGs and to the state outlining the local strategy to reach the level of waste reduction necessary within the given time frame.

All of the above approaches are being studied by the TNRCC. While some of these voluntary proposals are already being implemented and can be further supported by state programs and policy, any changes to fee rebate systems would need legislative action and additional consideration of the effects of those measures on funding for state MSW programs.

Issue 3. Measurement of Progress

What Is the Issue?

Currently, reporting on quantities, generators, and disposition of recycled materials is not mandatory for either public or private recyclers. Complete, accurate, and consistent information is not gathered and aggregated for recycled materials. Consequently, the TNRCC has not been able to obtain all of the information necessary to provide consistent or credible information concerning the level of recycling in the state. Three main problems are discussed below.

- *Inadequate reporting mechanisms*. Under the TNRCC's MSW Regulations, "processors, handlers, and collectors of recyclable materials are encouraged to report and keep appropriate records to facilitate measuring recycling rates," with 44 materials listed. However, no mechanism for reporting is specified. In 1995, focus groups of solid waste coordinators from the COGs expressed concern over the inadequacy of recycling rate measurement standards and lack of data on which to rely for planning purposes.
- *Questions about the accuracy of disposal measurements.* The TNRCC's MSW Regulations recommend that landfill operators measure and report on the amount of MSW received in tons, but allows *accurate* measurement and reporting in cubic yards. Landfills without scales actually *estimate* rather than measure incoming waste volume in cubic yards. This practice

often results in over-reporting of the amount of landfilled waste, since estimates tend to be based on the capacity of the vehicles that enter the facility, even though they might not be entirely full.

- *Lack of information on waste type and source by county of waste disposed of and recyclables collected.* Landfill operators currently report annually to the TNRCC on the nature of the waste they take in, according to 21 separate categories. Most of these categories designate special wastes that require manifests from the generator at the time of disposal. Over 93 percent of the total waste quantities reported in 1994 fell into six categories: residential, commercial, institutional, recreational, brush, and construction and demolition debris. Reported quantities for these categories are largely based on estimates by the facility operators rather than on tallies of loads identified by waste type at the landfill gate, and no specific reporting area (city, county, etc.) is stipulated.

What Can Be Done?

There are a number of measures that could be considered to increase the accuracy of reporting and reporting results, as shown below.

- *Increase reporting and improve accuracy.* The final report of the 40% Task Force lists increased reporting accuracy at the top of its recommendations for earliest implementation, including the use of scales at landfills.
- *Report tonnages of recycled materials by public and private sectors, including commercial and industrial facilities.* More than 25 states currently have reporting requirements in place for recyclers. The 40% Task Force also gave top priority to this issue in its recommendations.
- *Report geographic source and generator type of waste disposed of and recyclables collected.* The 40% Task Force also recommended that disposal operators should identify through their annual reports the geographic source (city and county) of the waste they accept and the generator type (e.g., commercial, residential, industrial).

The TNRCC can look at changes to its annual reporting standards to include more specific information about waste sources and generator types. The agency can also look at additional ways to obtain more complete information from recyclers in the state. The installation of scales at landfills has also been encouraged through the solid waste grant funding to local governments, and can continue to be an authorized grant category. However, any additional consideration of requirements for the installation of scales, as was proposed by the 40% Task Force, would need to be addressed by the legislature.

Topic 4
Local Collection of Municipal Solid Waste

Current state law requires that each county with a population of more than 30,000 and each municipality "shall review the provision of solid waste management services in its jurisdiction and shall assure that those services are provided to all persons in its jurisdiction by a public agency or a private person" (§363.113, Texas Health and Safety Code). This provision, however, does not spell out the manner nor the extent to which a local government is to assure that services are provided.

The adequacy of services being provided to local residents varies greatly across the state, and the lack of available collection and/or disposal services in some rural areas remains a concern. The concern about inadequate services, or a lack of services, is exacerbated by the effects of Subtitle D and the closure of many of the state's smaller, rural landfills.

Issue 1. Who Should Be Responsible for Providing Local Services?

What Is the Issue?

Local governments in the state, working in partnership with private entities, have done an excellent job in providing services under ever-changing conditions and increasingly complex regulatory requirements. However, there are certain areas where residents are not afforded the same collection and disposal opportunities as other state residents. Not only do these pockets of inadequate services affect the residents in those areas, but also the illegal disposal of solid waste that occurs as a result of a lack of services may affect the surrounding areas as well. The costs of dealing with the illegal disposal activities must be borne by both the local and state governments.

The law requires that counties with populations of over 30,000 and all municipalities assure that services are provided to residents. This does not mean, however, that services that are provided are sufficient to cover all of the needs. In many cases, the problem is not just that local governments may not want to take the responsibility for providing services, but in many of the underserved areas residents may be unwilling to pay the additional costs for services, and the local governments may have few alternative financial means to otherwise finance the provision of collection services.

What Can Be Done?

There may be a few states where the state governments participate in the construction and operation of landfills. For the most part, however, states designate local governments as the responsible entities for assuring that residents are provided basic MSW services, such as collection and/or access to disposal. The three main approaches used by other states are explained below.

- The majority of states have approaches similar to those used in Texas, where *cities and counties* are designated jointly to assure the provision of services.
- In a number of states, *counties* are designated as the primary entities for assuring that services are provided to residents.
- A few states have taken the regional approach even further, and designated a number of

regional districts, made up of individual counties or multi-county areas, with the responsibility for assuring services. In some cases, this arrangement is only with the consent of the local governments, whereas in others the regional approach is mandated by the state.[22]

One approach in Texas could be to provide more specific legislative direction to local governments for providing services. Further mandating that all counties in the state assure that services are provided might help ensure that there is a designated local governmental entity assigned responsibility for ensuring that services are provided to all residents in the state. However, even under the existing requirements, local governments may not have the resources to fully institute collection programs, so additional requirements may not address the problem.

Further formation of regional entities with the responsibility to provide services would allow for more alternative approaches to raising revenues and financing the provision of services. However, any mandated regional approach would cause concern by many local governments, as well as by private-sector service providers.

There is not a simple, "one-size-fits-all" solution to addressing this issue. State efforts may best focus on finding ways to assist local entities to provide services, rather than attempting to mandate additional local and regional actions. Where regionalization will assist in that effort, the state can examine supporting such approaches, where desired by the local governments.

Issue 2. How Can Local Governments Better Ensure That Services Are Provided?

What Is the Issue?

Notwithstanding any additional look at more requirements that counties and other local governments provide solid waste collection services, there needs to be a greater understanding by local governments of the need for adequate services and the alternatives available to them.

Local governments should understand that there are costs associated with not providing services. In a recent TNRCC survey of the 32 counties along the border with Mexico, some of the main reasons for high levels of illegal dumping were reported as: lack of collection services in colonias (53 percent of the counties); lack of convenient waste collection alternatives (47 percent of the counties); and the high costs at the closest legal disposal (40 percent of the counties). In the border region, an estimated $85 per ton were spent on the cleanup of illegal disposal and nuisance dumping sites. That figure would increase to $132 per ton if enforcement and outreach costs are added.

What Can Be Done?

Local governments can look to regional arrangements and partnerships for providing for the collection and disposal of MSW. Some regional arrangements that can be used include:

- *Interlocal agreements* between local governments and partnership arrangements through authorities or nonprofit corporations

- *District* approaches, such as through existing districts and authorities, or the creation of solid waste management districts
- *Public/private partnerships* between local communities and private entities

There are also a variety of approaches for providing collection services, including the traditional curbside collection. However, curbside collection may be prohibitively expensive in many of the rural areas where services are now insufficient. Other operational alternatives that can be considered include:

- *Transfer stations* to better consolidate waste collected in rural areas, to make transportation of the waste to a regional landfill more economical
- Conveniently located *citizens' collection stations,* to allow for residents to drop off their solid waste for subsequent transport to disposal sites

Local governments can also look to ways to ensure that, when services are made available, all residents participate in the use of those services or at least are required to share in the cost of providing services, as provided for by Section 364.034, Texas Health and Safety Code.

At the state level, efforts will need to continue to assist local governments to better plan for addressing their needs and to encourage regional cooperative approaches where those mechanisms will work the best. The regional planning efforts through the COGs, supported by funding from the TNRCC, serve as an important component of this effort, as does continuation of state funding support for a regional solid waste coordination effort by the COGs.

The TNRCC has also started a Solid Waste Assistance Partnerships (SWAP) program to provide consultation and technical assistance to CLEAN CITIES 2000 partners on approaches for addressing their solid waste management needs in a comprehensive manner. This and similar state assistance approaches will be continued.

Topic 5
Dealing with Nuisance Dumping and Illegal Disposal

Nuisance dumping is characterized by smaller volumes of waste that are randomly deposited. The areal extent of this type of dumping may be quite large and typically occurs on public rights-of-way, as well as vacant lots and open lands at the fringe of urban areas.

Illegal disposal sites, on the other hand, are characterized by larger volumes of waste with evidence of repeat dumping, burying, or burning of waste, or presence of excavations for waste disposal. Illegal disposal sites are typically found on private property, and often the property owner may charge a disposal fee.

With the closure of many of the state's smaller landfills and the decreased access to local disposal options in rural areas, along with increasing costs of disposal, an assumption has been that illegal disposal would become more of a problem. There is evidence that this assumption is correct: 19 of the state's 24 COGs cited noticeable increases in nuisance dumping and illegal disposal as issues of growing concern in their regional solid waste management plans.

Both state and local governments have authority and responsibility for dealing with nuisance dumping and illegal disposal. The costs of dealing with nuisance dumping and illegal disposal, both at the state and local levels, are extensive.

Issue 1. Measurement of the Illegal Disposal Problem

What Is the Issue?

Based on input from the COGs in their regional plans, as well as general input from local officials across the state, it would appear that illegal disposal is a significant problem in many areas. There is not, however, a standard mechanism for evaluating the extent of illegal disposal and the resulting problems. Additionally, there are no formalized procedures or systems for prioritizing the problems at either the state or local level.

Currently, the TNRCC tracks those cases where the state is involved in investigating and, where necessary, following up with enforcement action. These cases, however, represent only a small percentage of what is occurring in the state. For the most part, local governments bear the brunt of dealing with the problems, and in some cases the problems may not be dealt with at all. Therefore, it is difficult to present any statewide figures to document that illegal dumping is becoming a greater problem.

What Can Be Done?

At the state level, more comprehensive documentation, tracking, and prioritization of illegal dumping problems may be beneficial. The state of Oklahoma, for instance, recently commissioned a statewide survey of illegal dumping costs, managed through the Keep Oklahoma Beautiful organization.

In Texas, the TNRCC recently completed an illegal disposal survey of 32 counties near or adjacent to the border with Mexico. The TNRCC also contracted with Southwest Texas State University to conduct a survey of the location of all closed MSW landfills in the state, both those that were permitted and those that were closed before permitting was required. Of those sites, a certain percentage will probably be found to have been sites for illegal disposal activities.

Other efforts have been conducted on a regional scale by river authorities and by some of the COGs, although many of the regional solid waste management plans may not provide complete information on illegal disposal, in part because the local governments may not have complete information on the extent of illegal dumping in their areas.

The TNRCC's recently completed survey of border counties could serve as a model for studying the rest of the state. In addition, the statewide survey of closed MSW landfill sites will help document major illegal disposal sites.

One mechanism that could be utilized to a greater extent would be through the regional planning efforts of the COGs. Other regional entities, such as river authorities and other districts, could also step up efforts to document the extent of the problem. Ultimately, however, the documentation of such problems needs close examination by the local governments involved. Importantly, better tracking of the costs of dealing with illegal disposal by local governments would assist them to better allocate their limited resources.

Issue 2. Enforcement

What Is the Issue?

Illegal disposal in many areas, particularly the more rural areas, can be traced to the lack of convenient solid waste services, the price for those services, and/or the ability of local governments to require that residents use those services. It is also true, however, that some people will illegally dispose of their solid waste no matter how convenient or accessible are the collection and disposal options. The findings of a study by the Pennsylvania Economy League, Inc., for the city of Philadelphia, based on an assessment of costs and benefits to illegal dumpers, are noteworthy: Efforts to reduce the volume of illegal dumping by lowering the cost of legal dumping may stop some individuals from illegally dumping, but it is also necessary to raise the potential cost of illegal dumping to dissuade those who dump illegally as part of a business practice to maximize profits.[23]

Unfortunately, the enforcement of solid waste laws is still not considered a high priority for many local law enforcement entities, and many local enforcement personnel are not aware of the enforcement remedies available to them. Similarly, many of the public either are not aware of the laws or are not deterred by the potential enforcement under the laws.

In addition, some enforcement personnel experience relaxed or lenient court treatment of the illegal waste disposal problem, which conveys a sense of low priority or lack of concern. A concern expressed by local officials trying to deal with their illegal disposal problems has been that the legal system does not always take the enforcement of illegal disposal laws seriously enough.

What Can Be Done?

Addressing the need for more convenient and affordable services is one of the steps local governments can take to help reduce their illegal disposal problem. The enforcement side of the equation can focus on several components:

- Education about the laws and the problems with illegal disposal
- Developing the investigation resources to identify illegal disposal sites and to investigate and identify the perpetrators
- Strong follow-up to ensure that responsibility is assigned for dealing with the problems, to include prosecution and adequate penalties where warranted

There are several ongoing, statewide programs directed at littering and illegal disposal awareness. These efforts need to continue and, where possible, be expanded. At the same time, it is important for local governments to upgrade their local capabilities for dealing with local illegal disposal issues. Some approaches that local governments can consider include:

- Assign law enforcement or code enforcement officers specifically trained in dealing with illegal dumping to programs to enforce nuisance and illegal disposal laws
- Educate local judges and legal officials on the need for a consistent and forceful enforcement policy directed at illegal disposal
- Educate the citizens concerning the laws and regulations for dealing with illegal disposal, as well as the reasons why illegal disposal needs to be stopped
- Encourage regional cooperation in the education of the public and the training of enforcement officials, as well as in conducting enforcement programs

Efforts can be stepped up at the state level to prioritize the problems that are found. A next step in the TNRCC's closed landfill survey may be to better assess the sites that are identified in order to pinpoint where the major problems exist. The COGs and other regional entities can examine mechanisms to do likewise. Most importantly, however, are the efforts that local governments can and should make to assess the areas with the greatest problems and to apply resources to those areas.

Topic 6
Dealing with Liquid Wastes

Historically, landfilling has been one of the primary means of dealing with the large amounts of liquid wastes generated in Texas, including grease trap waste, grit trap wastes, septage, and sewage sludge. The regulations developed under authority of Subtitle D now prohibit liquid waste from being landfilled. Liquid waste is defined as free liquids that will travel through a paint filter.

Partly in response to the landfilling ban, the TNRCC formed an informal advisory group consisting of representatives from affected industry, local governments, and environmental groups to study the liquid waste management needs of the state. Based on input from this group, the TNRCC developed a *Strategy for Liquid Waste Management* in 1994. The agency has gone forward with implementing components of this strategy. This plan reiterates the main issues and recommendations proposed in the strategy, outlines the current status of implementing those recommendations, and discusses additional issues or concerns that may need to be addressed.

Issue 1. Enforcement of Standards and Monitoring of Activities

What Is the Issue?

The TNRCC's 1994 *Strategy* considered the need to address both the management and facility needs presented by the banning of liquid waste from landfills and the problems associated with mishandling and mismanagement of liquid waste, with the expectation that those problems would only get worse as liquid waste was kept out of landfills.

Local governments need to be aware of the potential problems with not having adequate controls on the management of liquid wastes. For instance, grease trap waste can cause significant problems for municipal wastewater systems if not dealt with properly. Similarly, illegal disposal of liquid wastes, including municipal sludge and septage, has the potential for harming valuable water supplies. Many local and regional efforts to monitor, investigate, and prosecute violations of illegal dumping laws may not have focused on the dumping of liquid waste in the past.

What Can Be Done?

To address the concerns about handling of liquid waste, the *Strategy* presented seven key actions focused on upgrading the monitoring of liquid waste management activities. The status of implementing those key recommendations is discussed below.

1. *Improve monitoring of transporters to ensure that liquid waste is properly managed.* The agency has adopted rules to improve the trip ticket system and the monitoring of liquid waste transporters.
2. *Develop a state authorization system for mobile processors.* Proposed rules for dealing with mobile processors are currently under consideration.
3. *Develop state authorization system for liquid waste transfer stations.* Rules establishing criteria and standards for liquid waste transfer stations have been adopted.

4. *Develop state regulations mandating 100 percent pump-out of traps.* Proposed rules are currently under consideration.
5. *Upgrade existing state rules dealing with Type V grease and grit trap waste processing facilities regarding permit standards, effluent standards, and sludge standards.* Proposed rules are currently under consideration.
6. *Create an educational program regarding the management of liquid waste.* Some informational materials have been developed concerning liquid waste management practices. A more detailed and structured educational process has not been fully developed. The TNRCC's CLEAN TEXAS 2000 outreach efforts, as well as local and regional education efforts, could include more focus on the management of liquid waste, especially in the prevention of illegal dumping and improper disposal methods.
7. *Add the management of liquid waste to the state solid waste plan.* This plan update, and the status report being prepared separately, include information on the management of liquid waste. However, a more detailed study of the state's liquid waste needs, as suggested in the strategy, has not yet been developed.

The TNRCC continues to look at implementation of the 1994 *Strategy*. In addition, state grant programs, particularly support for enforcement of illegal dumping laws, can also be used to focus attention on local government actions to deal with local liquid waste management problems.

As the TNRCC studies state standards and approaches, it is important that local governments further consider their role in setting and enforcing standards on how liquid waste is collected. Local governments need to be especially aware of the potential harmful effects that improper management of grease trap waste may have on their wastewater systems.

With the banning of liquid wastes from landfills, the potential for mismanagement is increased, and local programs can and should be upgraded where needed to address concerns regarding liquid waste. Model ordinances and regulations would be useful for those communities not experienced in dealing with liquid waste issues.

Issue 2. Need to Address Liquid Waste Management Needs

What Is the Issue?

Before liquid wastes may be placed in a landfill, processing must take place to solidify and stabilize the materials. In 1995, there were 11 permitted processing facilities (Type V-GG) for dealing with liquid wastes, two of which were inactive. There were also 19 permitted MSW landfills that were authorized to process liquid waste on-site. The number of processing facilities have increased from 1992 levels, when only six permitted processing facilities were open in Texas, and only one landfill processed liquid wastes on-site. Many permitted wastewater treatment plants also perform on-site storage and drying of the municipal sludge produced from their facilities, which is eventually transported for disposal.

In addition to the processing options, municipal sludge is dealt with in a variety of other ways in Texas. For instance, land application of municipal sludge for beneficial use is now a major method

for dealing with sludge; 456 registered land application sites handled 138,557 tons of sludge in 1995, up from only 141 active sites in 1991. The co-composting of municipal sludge with other organic materials, such as brush and yard trimmings, is also a growing alternative.

Even with the recent increases in processing facilities, there are still wide areas of the state that lack processing facilities, especially for grit and grease trap wastes. Although most of the major cities in Texas now have access to processing facilities, it would appear that much of the border region has limited access to means to process liquid waste, as do rural areas in West Texas. It is expected that a substantial amount of these wastes may be disposed of improperly.

What Can Be Done?

The 1994 *Strategy* inspected the management needs for liquid waste in the state, including alternative management approaches. Importantly, the *Strategy* reiterated the need to support the hierarchy of management methods of municipal sludge: source reduction and minimization of sludge production; treatment to reduce pathogens and recover energy, produce beneficial by-products, or reduce the quantity of sludge; marketing and distribution of sludge and sludge products; and landfilling. The status of the implementing recommendations from the *Strategy* is discussed below.

- *Reduce the volume of liquid waste through biotreatment in waste traps.* Local governments must take the lead in regulation of this approach.
- *Evaluate the potential to establish liquid waste processing facilities at publicly owned treatment works (POTWs).* Proposed rules encouraging this activity are under consideration.
- *Encourage liquid waste solidification facilities at existing landfills.* Existing rules allow for permitted landfills to process liquid waste. The TNRCC has worked to inform landfill owners and operators of this option, and the number of landfills conducting liquid waste processing is increasing.
- *Establish a special TNRCC team to review Type V permit applications.* The TNRCC determined that creation of a special team was not feasible. However, the TNRCC has developed staff expertise in these activities, in support of making the permitting process work as efficiently as possible.
- *Establish a special TNRCC team to assist Type V permit applicants.* TNRCC staff with the necessary expertise are available to provide assistance.
- *Develop rules to exempt car washes from grit trap permit requirements.* Rules have been adopted and are in effect.
- *Encourage transfer and temporary storage facilities in smaller communities.* Rules to help encourage this approach have been adopted and are in effect.

The TNRCC has gone forward with regulatory changes to support and encourage the further establishment of facilities and management programs for dealing with liquid wastes in the state. These state-level regulatory approaches alone, however, are not going to solve all of the local management problems nor address all of the state's facility needs.

Local efforts are increasing to establish facilities and, importantly, to look at alternative approaches beyond the traditional processing and landfilling of liquid wastes and sludge. For

instance, major co-composting operations have been started or are in development in several areas, especially in East Texas, where wood wastes and organic materials are available. Similarly, many areas of the state, such as West Texas, are seeing increases in the land application of municipal sludge.

Building the facility infrastructure for dealing with liquid waste will still take some time, and the state can do more to encourage and support these efforts. The regional plans prepared by the COGs can include more of a focus on the needs for dealing with liquid wastes in the planning regions. Also, local governments can be encouraged and supported in developing more comprehensive plans outlining the need for oversight and regulation of liquid waste management processes and identifying the facility requirements that should be evaluated.

The TNRCC could look at compiling information from the planning regions to develop a more complete statewide strategy that not only looks at state regulatory processes, but also better evaluates the statewide management facility needs of the state, to make decision makers better aware of the problem areas. The TNRCC can also look at better coordinating its efforts directed at liquid waste management in the state; currently, several different agency program areas deal with different aspects of liquid waste, and the goals and policies of those programs need to be consistent.

Also, state solid waste grant funds have been and are being used by the COGs to support local enforcement efforts, develop co-composting facilities, conduct studies and planning for dealing with sludge, and support other local efforts directed at liquid waste management. These efforts can be continued, and the need for dealing with liquid wastes can be made a higher priority in areas with problems. Additional evaluation of recycling and beneficial-use options for other liquid wastes, in addition to municipal sludge, can be also considered.

The best mechanisms for addressing the management and facility needs of the state are varied, and must be looked at according to each region and local areas. The state role will need to be to assist the regions and local areas to better understand the problem and to identify the best approaches that will fit within their particular needs. The role of the private sector in providing processing and other management services must also be considered.

Topic 7
Dealing with Closed and Abandoned MSW Landfills

The purpose of the federal 1984 Hazardous and Solid Waste Amendments to Subtitle D of the Resource Conservation and Recovery Act (RCRA) was to enhance landfill safety and boost public confidence in landfills as a component of a workable integrated waste management system.[24] The result of these requirements, as implemented by EPA regulation and passed on to the states, is that all existing landfills now meet tough new standards of construction, operation, and closure to protect public health and the environment.

An issue not covered by the new requirements, however, is what should be done with the old and abandoned landfill sites that operated prior to recent changes to the regulations. Since many of these closed landfills were established years before any of the requirements were in place for such things as clay or other impermeable cover, settling due to the decomposition of waste can cause ponding and the infiltration of water into the waste. This infiltration increases the potential for leachate and the accelerated generation of landfill gases. Also, historically, communities utilized old sand and gravel pits, ravines, and floodplains that, because of the potential to contaminate groundwater and/or surface water, are now considered undesirable for waste disposal.

Recognizing some of these concerns, and as a result of several specific problems occurring with development over closed landfills, the 73rd Texas Legislature enacted H.B. 2537 in 1993. The bill established requirements for identification, recordation, registration, and permitting of development over closed landfill units. The bill also called for the inventory of closed and abandoned landfill units and listing of those sites by the COGs in their regional solid waste management plans. The bill requires the COGs to submit the information on those site locations to the county clerks for recordation on county land deed records.

The TNRCC has adopted the development restrictions and implemented the permitting requirements. In addition, in cooperation and coordination with the COGs, the TNRCC contracted in 1995 with Southwest Texas State University to do an initial inventory of all closed landfills, permitted or otherwise, to determine the location and general characteristics of all known sites.

According to preliminary data from this inventory, there are over 3,400 closed MSW sites in Texas. It has been determined that about half of these sites were either permitted or had applied for a permit, and the other half were never permitted or never applied for a permit. Some important points derived from the preliminary data include:

- The average size of these sites is 43.79 acres
- Of these landfills, 45 percent received less than one ton of waste per day, but 17 percent received more than 100 tons per day
- Initial data on those closed sites that were not permitted indicate that as many as 68 percent took industrial waste, but information on hazardous waste is inconsistent at this time

Issue 1. What Is the Extent of the Problem?

What Is the Issue?

Do these landfills pose a problem to the state's environment and the public's health and safety? The answer is that there are certainly reasons to be concerned. The greatest concerns with these old closed and abandoned landfills are the contamination of groundwater and/or surface water by leachate and the lateral subsurface migration of gases. The possible impact on public safety is also further heightened by the fact that land that was once used as landfills has subsequently been developed for other purposes.

The landfills of most concern are those that were operated before many of the more recent permitting and controls were in place. For example, landfills that closed prior to 1970, when the state began regular permitting programs for MSW landfills, most likely had only limited siting and construction controls in place to ensure the integrity of the site over a long period. In addition, sites that were in existence at that time and continued to operate under a grandfather status also may not have had much in the way of controls. Major unauthorized disposal sites, including more recently operated sites, would have even less controls.

What Can Be Done?

A recent telephone survey by the TNRCC indicates that a number of states maintain an inventory of closed and abandoned landfill sites, although the states may vary on the extent to which those inventories are updated. In response to H.B. 2537, the TNRCC determined that an initial statewide inventory approach would best satisfy the requirement that inventories of these sites be included in the regional solid waste management plans.

This initial inventory is nearing completion. However, it does not give the needed information concerning which landfill sites may pose an existing or potential problem. As a next step, it may be necessary to establish further criteria for assessing the old landfill sites to determine whether a problem or potential problem exists. A risk evaluation procedure could be used to focus on those sites that may be of most immediate concern.

The TNRCC intends to go forward with the site evaluation process, if funding for the effort is available. After the TNRCC completes an evaluation of the identified sites, any follow-up actions by the agency will depend upon the extent of the problems found at the landfills.

Issue 2. Who Should Be Responsible for Dealing with the Problems?

What Is the Issue?

With the older, closed landfills, responsibilities for dealing with potential problems may not be clearly defined. Under current regulations, the TNRCC attempts to locate responsible parties. However, because these sites are old, closed, and/or abandoned, this can be a daunting task. Even

in those instances where a responsible party can be located, the potential costs to remediate the site may be more than the resources of that party.

It is also important to note that many of these sites have been owned or leased by counties or cities. Considering the funding constraints that many of these entities currently are experiencing, it may not be expedient to impose requirements for them to deal with the problems by themselves.

In addition, the statutory requirement that the COGs notify the county clerk of the location of landfill units, for entry into deed records, may need to be reconsidered by the legislature. For the most part, the COGs will not have the detailed site investigation and survey information for each landfill unit necessary to put such information into deed records. Also, further consideration may need to be given to the liability issues associated with the practice of having the COGs provide such information to the county clerk.

What Can Be Done?

The TNRCC will continue to enforce regulations for assigning responsibilities and liability for cleanup, especially on those sites that operated under the permitting systems.

The TNRCC has also been reviewing possible combined risk assessment procedures to allow for better mechanisms to ensure that the remediation and corrective action needed for a particular site are consistent with the potential threat posed by that site, given factors such as intended uses and the types of waste materials present. These programs may be available to ease the costs and time associated with ensuring compliance with regulatory standards.

The intent of any follow-on program to the inventory and site evaluations should be to correct the problems that are posing a threat to public health or the environment, and not create additional financial hardships for local governments. The programs should also be cognizant of the concerns by private property owners. Landowners may also be concerned about the effect that these efforts will have on property values, even in cases where a disposal site may not be creating a problem.

It may be premature to propose any new legislation or regulations for changing how liability and responsibility for dealing with problem sites are assigned, given that the true extent of the problem has not been fully assessed. The responsible approach may be to bring together the affected local governments and private interests to study how the state can best address their liability concerns.

The TNRCC can also work with the COGs to make sure that the inventory of landfill sites is available to those persons and entities that need the information. An alternative to the current requirement that COGs submit information from the inventories to county clerks for entry into deed records could be the creation and maintenance of an official registry of landfill sites, available to the public. For the most part, the COGs will not have the detailed site information from the landfill inventories to allow for entry of that information into deed records.

Issue 3. What Resources Are Needed, and What Resources Are Available?

What Is the Issue?

The extent of possible problems at some of these old sites cannot yet be estimated. It may be that only a minimal number of these sites will need attention. It is expected, however, that as more sites are looked at closely a significant number of existing, or at least potential, problems may be found.

Even where only a few sites are found to have problems, the potential costs for dealing with those problems can be high. For instance, the TNRCC recently spent almost $3.6 million to help remediate an old Type IV landfill in the Houston area that was found to have problems.

The TNRCC has the authority to utilize some of the Solid Waste Disposal Fee revenues for a contingency fund to assist in remediation and corrective action at MSW landfill sites where responsible parties cannot be identified, or where those parties may not have sufficient resources to deal with the problem and immediate action is needed. Other demands on the fee funds, however, have limited the availability of those revenues for a contingency fund.

What Can Be Done?

A recent telephone survey of major states by the TNRCC found that a number of states have instituted programs for dealing with old landfill sites. The survey confirmed that a number of other states have established dedicated funds through disposal fees for use in remediating problem sites.

In Texas, a possible source of immediate funding would be for the legislature to appropriate part of the remaining balance in the Solid Waste Disposal Account to support the already-authorized contingency fund. It is estimated that, by the end of FY 1997, there could be a balance in excess of $7 million remaining in the account. Assigning a portion of that balance to the contingency fund would assure that the TNRCC has available at least a minimum level of resources to address emergency situations where there is an immediate threat to public health or the environment.

In conjunction with the use of the contingency fund discussed above, the federal Superfund program might also be an option for funding the remediation of emergency problems at landfill sites that meet the EPA's criteria, such as a landfill that operated prior to establishment of the state's MSW landfill permitting program, or an illegally operated landfill that is identified as having received hazardous materials. It is too early in the evaluation process to determine whether there are landfills that would be appropriate to recommend for consideration under the Superfund program, and the TNRCC will need to further investigate this option as the agency goes forward with evaluating the closed and abandoned landfill sites.

Additionally, the TNRCC is considering options for funding the evaluation of priority-ranked closed landfills in order to define the scope of problems and risks to public health and safety and the environment presented by closed landfills. Balances in the Disposal Account could also be applied to this statewide evaluation effort.

The potential problems and the specific program recommendations will need to be further evaluated before final program plans are developed. The approaches used should include cooperation with local governments, and recognition of the need to address any problems at the lowest governmental level possible.

A charge of the House Environmental Regulation Committee during 1996 was to review the need for funding the MSW Superfund (the TNRCC prefers to use the terms *contingency* or *remediation* fund) authorized in the Health and Safety Code for the specific purpose of addressing closed landfills that pose a threat to public health and safety. Those committee findings will be available for the 1997 legislative session.

Topic 8
Dealing with Household Hazardous Wastes

Solid wastes designated as hazardous under EPA regulations are subject to the requirements of the state's Industrial Solid Waste and Municipal Hazardous Waste Regulations (30 TAC Chapter 335) and, except for certain exceptions, are not managed within the MSW management system. Although a variety of materials present in the waste stream from municipal residential sources may fit under the normal definition of hazardous materials, wastes from household sources are not regulated as hazardous.

As the regulations dealing with the construction and operation of MSW landfills have become more stringent, some would argue that those landfills are now designed to safely contain potentially hazardous materials such as *household hazardous waste* (HHW). This containerization approach, however, requires long-term care after closure. HHW is also often improperly disposed of by means other than the solid waste system. For instance, residents may pour leftover pesticides, used motor oil, and other liquids down storm drains or into open drainage areas.

Issue 1. Source Reduction of HHW

What Is the Issue?

The most preferred method on the solid waste management hierarchy is *source reduction*, which holds true for dealing with HHW, as with other solid wastes. Texas has taken steps to keep some types of material out of the waste stream, through bans on the disposal of lead-acid batteries and used oil and oil filters. These materials, however, are more readily recycled than many of the other materials that make up HHW, and bans on other materials could not be as easily implemented.

What Can Be Done?

While further bans on disposal are an option, many of the other materials may not have a ready recycling option. Any bans can also possibly leave the material accumulating in homes and other areas not suitable for storage of larger amounts of the products, and bans can increase the illegal disposal of the banned materials.

Apart from outright bans on materials, fees on the sale of some products are imposed by some states. These product fees, or taxes, are normally charged per item at the retail level on products that are difficult to dispose of, although taxes could also be considered at the manufacturer level. Product taxes are used for several purposes: advance funding to help offset the costs of disposing or recycling waste created by using a product; general revenue for solid waste management programs; and/or an incentive to the public for waste reduction and recycling by requiring customers to pay for waste disposal costs up front.[25] In Texas, these types of fees are applied to the sale of tires, motor oil, and lead-acid batteries.

It would appear to be much harder to place a fee on a variety of other products that may make up what is considered household hazardous waste, such as fees on the sale of pesticides and other chemicals.

Other approaches can focus on partnership arrangements with industry. For instance, many industries are now taking the lead in finding and making available less toxic or harmful alternatives for pesticides, cleaners, and other products.

In other parts of the country and in Canada, the number of *take-back* programs, in which industry accepts back unused and excess products, is also growing. The take-back initiatives are a recognition by industry of their responsibilities for dealing with excess materials not used by the homeowner. Government involvement can help to coordinate these efforts, while the collection costs themselves are borne by the industries. The TNRCC already works with industries on a variety of pollution prevention initiatives and that relationship could be used to promote similar take-back programs.

In addition, a recent regulatory change by the EPA, if incorporated into the TNRCC rules, will assist in promoting private industry and commercial programs for collection and recycling of these types of materials. The new Universal Waste Rule eases some of the requirements on small and large businesses that handle batteries (nickel-cadmium and small sealed lead-acid batteries), agricultural pesticides, and thermostats containing liquid mercury. This rule will encourage further collection and recycling programs for these materials, thereby keeping them out of the waste stream. The rule should also encourage more companies to offer take-back programs for the public, and other recycling opportunities that will be beneficial to not only commercial generators and handlers of these materials but also the public. The TNRCC is currently working on proposals for implementing the new federal standards.

Issue 2. Lack of HHW Collection Facilities, Events, and Education

What Is the Issue?

Currently, five permanent HHW collection facilities operate in Texas. In addition, during 1995, 48 HHW collection events were held by local governments, collecting more than 1.2 million pounds (646 tons) of materials from 22,977 participants. The amount of HHW collected through these activities has increased each year since 1986, when only 34,700 pounds were collected.

Although the number of HHW collection events continues to increase each year, the costs associated with the programs have kept the number of events low. The average cost per participant over the 10-year period from 1986 through 1996 was $105.34. Therefore, the opportunities for residents to recycle their HHW are still not prevalent.

What Can Be Done?

One important approach taken by the state is to support pilot programs and start-up activities by local governments through funding assistance. The TNRCC has funded HHW collection through its local grants using the Solid Waste Disposal Fee revenues. Although these collection events are expensive and may not collect a large amount of materials relative to the costs, they serve as an important education and awareness tool.

Another approach is through collection partnerships between local governments and private industry. This has been successfully done in the Ship Channel area of Houston for almost 10 years, where four collection events are now held each year. Costs for collection are paid entirely by the East Harris County Manufacturers Association, and citizens in the surrounding areas benefit by having an outlet for the disposal and recycling of HHW. Additional partnerships are promoted through the TNRCC's CLEAN TEXAS 2000 programs: CLEAN INDUSTRIES 2000, CLEAN CITIES 2000, and CLEAN TEXAS STAR. Ultimately, these joint partnership approaches are some of the most promising mechanisms available, given the limited resources of local governments to conduct HHW programs.

Over the long term, public outreach and education are the real keys to dealing with HHW. It will be the public support that encourages industry to provide safer alternative products, and an educated public is better able to purchase and use those products in a responsible manner. Through its CLEAN TEXAS 2000 programs, the TNRCC already offers education and outreach programs to provide information to local communities and residents on methods for dealing with HHW. Other state agencies also provide education and assistance on issues related to HHW.

The TNRCC will continue to support local efforts to provide collection alternatives for HHW. The TNRCC also includes HHW programs as possible Supplemental Environmental Projects (SEP), whereby a respondent's willingness to voluntarily support such projects may be considered by the TNRCC in the settlement of enforcement actions.

Also, as indicated above, although it may appear that the costs of collection events relative to the amount of materials collected are high, those events are valuable mechanisms for outreach and education. Locally sponsored collection events can mobilize public action toward dealing with HHW, spreading the benefits of the collection event beyond just the event itself.

Topic 9
Municipal Solid Waste Management along the Border

Texas shares approximately 1,250 miles of border with the Republic of Mexico, separated by the Rio Grande and stretching between El Paso and Brownsville. There are 14 Texas counties that share a common border with Mexico, and 32 Texas counties extend to within 100 kilometers (62 miles) of the border.

Over the last two decades, the region has seen substantial growth, and a large percentage of the population is clustered in a few major cities: El Paso, Del Rio, Laredo, McAllen, Harlingen, and Brownsville. Much of the growth in this region can be attributed to increases in industry and trade in the region, as well as continued influx of migrant workers and an itinerant population, who tend to cluster in and around suburban areas where housing is affordable but where basic environmental services (trash collection, sewage connections, and a potable water supply) are limited or are not available.[26] These unincorporated areas of development, characterized by the availability of only limited basic infrastructure, have been termed *colonias*. In 1995, the Texas Water Development Board (TWDB) estimated that there were 1,453 colonias, with a total population of 343,321, in the border region.[27]

Issue 1. Collection and Disposal Needs

What Is the Issue?

Border regions report many of the same problems as other rural and economically distressed areas of the state. However, many of these problems are more prevalent and concentrated along the border, and local governments may have fewer economic resources to deal with them. In addition, many of the conditions that create these problems are different and unique to the border region.

Collection of solid waste in the border areas, especially in the colonias and other unincorporated areas, is inconsistent and often inadequate. All of the COGs along the border indicate that there is a need for adequate collection services. This lack of convenient and affordable service probably has a direct impact on the amount of illegal dumping and open burning in the area.

Counties with populations of less than 30,000 are not mandated to assure that residents have access to solid waste services. In these counties, an inconsistency of services exists, and, aside from the larger incorporated cities, many residents have few organized collection alternatives available. To address some of the issues of responsibility concerning provisions of services, H.B. 1001, enacted by the 74th Texas Legislature in 1995, included a provision that counties in the affected region adopt standard subdivision regulations, including requirements for the provision of solid waste services. However, the intent and enforcement of these provisions as they pertain to providing MSW collection and disposal services are not clear.

Even with the responsibilities set out in the statutes, many of the cities and counties do not possess sufficient resources to provide solid waste collection services to all areas of their jurisdiction, especially in the colonias and other unincorporated areas.

What Can Be Done?

The TNRCC's solid waste grants provide some funding to the region for recycling, enforcement, and citizens' collection station projects, but that funding is limited. Resources available through the NADBank, created under agreements between the United States and Mexico to assist in financing border-area programs, may be available, but the efforts financed through that program may be larger and more regional in scope than may be needed for smaller MSW-related projects. However, these and other resources can be further explored. Importantly, the TNRCC and other state efforts can help in locating financial resource programs that may assist in providing for solid waste infrastructure.

Another approach that can be considered is further state and regional assistance to border communities through self-help programs, which could be similar to the TNRCC's Texas Small Towns Environment Program (Texas STEP). Under the Texas STEP activities, the TNRCC and other participating state agencies provide advice and guidance to small communities to help identify and work to solve their urgent water and wastewater problems. The program focuses on assisting communities to meet their local needs with less money and to identify additional state, local, and national resources available to self-help projects.

Important approaches for communities in these areas to consider, as with other rural areas of the state, are to look at regional arrangements for providing services. For instance, it is probably not feasible to expect that curbside collection services could be provided to many of the colonia areas. However, strategically placed collection stations and regional transfer stations, with opportunities for recycling included, may go a long way toward addressing some of the needs. Pilot projects can be considered to test the feasibility of the comprehensive approaches to possible solutions, including solid waste disposal alternatives, public education outreach, enforcement, and site remediation.

Issue 2. Illegal Disposal and Open Burning

What Is the Issue?

All of the COGs in the border area report that illegal disposal is a pervasive problem in their respective regions. Many major factors influence the illegal disposal problems in the Texas-Mexico border area, including significant increases in population in the unincorporated areas, a decline in accessibility to and the number of permitted disposal facilities, and strained local government resources.

In their responses to the TNRCC's border-area survey, officials from the 32 border-area county governments estimated that a total of 1,247 illegal dump sites were cleaned up during the past year, and that approximately 20,000 additional sites still exist, primarily small, nuisance dumping sites, but also several large sites of over 10 acres in size. An estimated $1.15 million were spent by county governments over the past year in responding to illegal dumping problems, and county officials estimate that a one-time cleanup of all existing dump sites would cost $21.88 million.

Open burning is also a problem in the border region, both on-site (e.g., at residential or vacant lots) and off-site (i.e., at illegal disposal sites). This is not merely an air quality issue, but the ashes may contain increased concentrations of many contaminants that had been disposed of. As rainfall occurs, leachate from the ash can be carried into stormwater systems, drainage ditches, bodies of surface water, and possibly water wells.

What Can Be Done?

The solutions to the illegal dumping and open-burning problems should focus on facilitating voluntary compliance with MSW regulations and other safe disposal practices by solid waste generators, rather than focusing solely on continuous cleanup responses by local governments at dump sites. The facilitation of long-term voluntary compliance can only occur successfully through local initiatives that promote awareness, offer safe and legal disposal alternatives, and enforce existing laws where necessary.

Just as regional approaches to providing services may be the best answer for many of these areas, regional approaches to enforcement of solid waste laws and regulations also may be the best approach.

Issue 3. Data and Information Needs

What Is the Issue?

There is a lack of reliable planning information concerning current and potential problems related to MSW management along the border with Mexico. This is a problem for the existing waste management situation, as well as for the evaluation of the potential effects of the North American Free Trade Agreement (NAFTA) on border solid waste facilities.

One important area of MSW management in the border areas for which there is only limited information concerns the solid waste generated by the maquiladoras located in Mexico. Maquiladoras are manufacturing plants operating in Mexico's border areas and are frequently owned and operated by American companies. The generation, transportation, and disposal of wastes created by these plants are regulated in Mexico by Mexican law on the federal, state, and municipal levels. At this time, companies are required to transport wastes back to the country of origin if they were created from materials temporarily imported. The extensive operation of maquiladoras generates only limited and uncertain data regarding solid waste. Without consistent, reliable, and accurate data, especially relevant data from Mexico, it is difficult to fully quantify and assess border solid waste needs, establish priorities, and formulate policy.

What Can Be Done?

The COGs along the border have all increased their efforts to obtain more complete information about colonias and the possible effects of waste from Mexico being disposed of in the border area. Additional data collection and analyses both by COGs and by other entities are needed to determine possible impacts.

Also, in many areas along the border, such as the colonias, there is not always a clear management structure that can be utilized to obtain information concerning the generation and disposal of solid waste. The TNRCC and the COGs are working together to obtain data and information concerning these areas.

Issue 4. Need for Education and Training

What Is the Issue?

There is a need for greater public information, awareness, and training along the border, perhaps to a greater extent than the rest of Texas, because of generally low literacy levels and below-average income levels. As part of this problem, facility operators and the local officials that manage solid waste facilities need special attention as to training concerning new and updated state requirements and regulations.

What Can Be Done?

The TNRCC and other state agencies currently have a number of statewide education and public awareness efforts under way that can be focused specifically on the border regions. Importantly, the state programs to encourage solid waste educational programs in the public schools could place a priority on getting those programs established in border-area schools.

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